Acacio
FERTILITY CENTER
Pathway to Parenthood

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Common Questions about Infertility

Introduction:
It can be quite overwhelming to be confronted with fertility problems. After all, this is something that is supposed to happen very easily, and usually people are more concerned with not getting pregnant and what form of contraception they should use. By the time someone starts asking the questions posed herein, they have usually read a few articles, spoken to friends and family members, had someone tell them to "just relax" and perhaps even seen their general practitioner for advice. Below are 30 general questions with answers to help you get a better perspective about this area of medicine. Fortunately, nowadays the treatments are very effective and the vast majority of patients can achieve success. If you need any further information on any of the topics addressed in this piece, please let us know.

1. **What is infertility?**
   Infertility is a common problem that affects 15-20% of couples. Approximately 20% of normal couples will conceive in one month of trying; 50% will become pregnant in three months of trying and 80% will conceive within 12 months. We call this the "fecundity rate." Infertility is, therefore, defined as one year of spontaneous intercourse occurring in the presence of normal ovulations and adequate sperm. It is usually not prudent, however, to tell a patient who presents for treatment, to go away and try for a year before commencing intervention. The reality is that it is not difficult to conceive (there are over 6 billion people on the planet, many of whom cannot read or write and they conceive without any difficulty). Therefore, when a patient presents with a history of difficulty getting pregnant, it is a good idea to begin the fertility work-up at that time, to try to determine the cause(s) of the problem.

2. **What causes infertility and how do you treat it?**
   The main causes of infertility are poor sperm quality (35%), blocked or damaged fallopian tubes (35%), ovulation problems (15%) and unexplained infertility (15%). Many patients classified as having unexplained infertility are likely to have undiagnosed issues relating to egg quality (such as maternal age >40 and/or increased FSH levels), or immunologic issues affecting the ability of the embryo(s) to attach to the uterine lining (implantation). A small percentage of women will have structural abnormalities of their uterus or conditions in which the brain does not signal the ovaries to produce mature eggs. Fertility treatment is targeted toward the cause. Some patients will only need simple treatment (i.e. medication to induce ovulation and/or intrauterine inseminations); others will need more advanced treatments, such as in-vitro fertilization (IVF)

3. **How do I know if my tubes are blocked?**

Tubal blockage is one of the most common causes of infertility. The fallopian tubes are not merely "pipes"; they are highly complex structures that pick up the ovulated egg and help move it towards the uterus. Normal fertilization occurs in the tube. Damage to the tubes is often caused by a previous pelvic infection. The most common culprit is a microorganism known as Chlamydia, which is the most common sexually transmitted disease in the U.S. causing Pelvic Inflammatory Disease (PID), and which often causes no symptoms in women until they find they are infertile. Other causes of PID include an organism known as Gonococcus and other diverse organisms that gain entry and grow in the female reproductive tract following miscarriage, abortion and delivery. Other causes of tubal damage are endometriosis, and previous abdominal surgery, especially due to a ruptured appendix or a ruptured ovarian cyst. A history of ectopic pregnancy often indicates prior tubal damage due to infection. Tubal occlusion can be diagnosed by laparoscopy if dye is not seen passing through the tubes. A hysterosalpingogram (HSG) is a less invasive method of documenting the status of the tubes, in which a small amount of dye is injected through the vagina and an x-ray shows the dye spilling into the pelvis. However, even if the tubes are patent, with a history of previous infection, there is likely to be damage within the tube that destroys its normal functions. A diagnosis of tubal disease is best treated by IVF. While it is possible to open the fallopian tubes with tubal corrective surgery, doing so may in fact make the situation worse, by resulting in a patent, yet damaged tube(s) and thus leave the person at high risk for ectopic pregnancy. Therefore, it is often best to either resect these damaged tubes, or do a tubal occlusion procedure via laparoscopy and cauterize the tubes adjacent to the uterus to block them off.

4. **How do I test the quality of my sperm?**

Sperm quality is easily evaluated by performing a semen analysis. A sperm sample is produced (preferably by masturbation, but can also be collected into a special condom) after 3-4 days of abstinence. It is then analyzed in the laboratory by trained andrologists for count, percent motility and morphology. A normal sample has between 20-100 million cells/mL and fifty percent of those should be moving forward. We call these measurements: Bulk Semen Parameters. A majority of the sperm cells are filtered, first at the cervix and then at the opening to the fallopian tubes. Abnormalities in bulk semen parameters can significantly decrease the potential of creating a pregnancy. The shape (morphology) of the sperm cell is another important factor. A normal sperm cell has three parts: a head, which contains the genetic material; a tail, which moves the sperm cell forward; and a mid-piece, which is like a battery pack. The genetic material is surrounded by a bag of enzymes called the acrosome, which help the sperm to fuse with the egg cell membrane. Abnormalities in shape are often, but not always, indicative of abnormal functioning of the sperm quality. Using Strict criteria, if less than 14% of cells are normally shaped, the chance of fertilization is decreased. If less than 4% of cells are normal, the chance of complete fertilization failure is extremely high and treatment with IVF/Intracytoplasmic sperm injection (ICSI) is recommended. Mild abnormalities of the semen analysis can sometimes be successfully treated with intrauterine insemination (IUI), however, moderate to severe abnormalities are should be treated with IVF/ICSI to offer any reasonable chance of success. Because the semen analysis is such an important factor in determining treatment, it should only be performed in a laboratory that is especially equipped to handle them and that performs them often.

5. **How do I know if I ovulate?**

Abnormalities of ovulation account for 10-15% of all infertility and approximately 35% of infertility problems among women. The menstrual cycle has two parts, which are divided by ovulation. In the first half, which is called the proliferative or follicular phase, the ovary produces predominantly estrogen and in the second half, which is called the secretory phase, the ovary produces both estrogen and progesterone. The length of the cycle is determined mainly by the first half, which can vary in duration, while the second half is usually constant in most women at 14 days. The most reliable predictor of ovulation is the occurrence of regular menstral bleeding accompanied by cramping and breast tenderness. These symptoms are caused by the female hormone progesterone, which is only produced after ovulation. It is possible to document ovulation by measuring the progesterone level in the second half of the menstrual cycle. Other indicators of probable ovulation include sustained elevation of the basal body temperature or the detection of an LH surge using an ovulation detector kit. These over the counter kits are quite accurate, but false positive and negative results can occur. Irregular menstrual cycles are often a sign of an abnormality of ovulation and can be caused by a disturbance of thyroid function, increased levels of the hormone Prolactin or an imbalance of male to female hormone ratios, commonly seen in a condition called polycystic ovary syndrome (PCOS). Also, ovarian diseases such as endometriosis, can be associated with disturbances in ovulation.

6. **How do I know when I ovulate?**

Knowing the timing of ovulation is important because a woman only ovulates once per month, and the ovulated egg can only survive for 24 hours. In most women, ovulation occurs about 14 days prior to the onset of bleeding, which in the ideal menstrual cycle of 28 days, would be day 14. However, since the length of the cycle varies depending of the length of the first half, ovulation does not always occur on the same day. An inexpensive method of determining the day of ovulation is to chart the basal body temperature (BBT) each morning prior to arising from bed. In the first half of the cycle the normal basal temperature is around 97°F. Twelve (12) to 24 hours after ovulation, the temperature rises to the standard 98.6°F. The BBT is good for documenting ovulation, but is less desirable for timing intercourse, as the temperature rise begins only after ovulation has occurred. It really is not necessary to chart more than one or two cycles with the BBT, as by that time, the answer should be apparent if ovulation is taking place. Ovulation predictor kits, which can be purchased at most pharmacies and supermarkets, are more useful for timing intercourse, as they can predict when ovulation is going to occur, before it happens. They function by measuring the spontaneous LH surge in the urine (like a home pregnancy test), which is the trigger for, and precedes normal ovulation. A positive test indicates that ovulation will be occurring in the next 12-36 hours and can be used to time intercourse and inseminations, as well as provide information regarding the length of the second half of the cycle.

7. **How do I know if my eggs are too old?**

The peak fertility for women is around age 27y. This level stays about the same until approximately age 37.5y, when it begins to decline. At age 40y, the rate of decline accelerates and by age 42y a woman has lost almost 50% of her fertility. This decline continues until the menopause, which occurs around age 51 (range: 40-55yrs) in the U.S. Unlike men who continue to produce sperm throughout

their lives, women are born with all the eggs they are ever going to have. At the time of puberty a woman has about 500,000 eggs and she loses them at a rate of approximately 1000 per month. Of those 1000 eggs, only one will mature enough to ovulate. The others will atrophy and die off. The development of eggs is controlled by the pituitary gland, which releases a hormone called Follicle Stimulating Hormone (FSH). FSH signals the ovary to make a group of follicles grow. Inside of each follicle is an egg. The follicle produces estrogen, which signals the brain that the system is working. At the beginning of a woman's reproductive life-span, the ovary responds readily to stimulation from the brain to produce a mature egg. However, over time the ovary uses up its best eggs. As with a barrel of apples, at some point there are only the bad ones left at the bottom. These remaining eggs do not respond as easily to the FSH signal from the brain. The brain then makes more FSH in an attempt to coax the ovary to produce an egg. We often measure the FSH level on the third day of the menstrual cycle as an indication of ovarian reserve. When the FSH level rises above 9 mIU/ml it indicates the onset of ovarian resistance to fertility drugs. An FSH of above 12 mIU/ml (as measured in our laboratory), points to a degree of ovarian resistance that is associated with a markedly reduced chance of having a successful pregnancy using the woman's own eggs, even with IVF. An elevated FSH level does not necessarily mean that the woman is entering menopause early (although it can), only that her reproductive potential may be reduced. Most women with increased FSH levels continue to have regular periods. Women with elevated FSH levels do not respond to stimulation with fertility medications and are best treated using donor eggs.

8. What is polycystic ovary syndrome (PCOS)?

Polycystic ovary syndrome (PCOS) is a common endocrine disorder affecting up to 15% of women of reproductive age. It is diagnosed by having 2 of the following 3 conditions: 1. Irregular periods (indicating irregular or no ovulation) 2. Clinical or biochemical signs of elevated male hormones and 3. Polycystic appearing ovaries on ultrasound. The exact cause remains unknown. The most common symptom of PCOS is irregular menstrual bleeding. Patients may also complain of oily skin and acne or excess hair growth in undesirable areas. Some patients with PCOS are at risk to develop diabetes. Many patients are overweight and fatty tissue can also produce male hormones, compounding the problem. Even a mild weight loss of 5-10% of body weight can sometimes improve the situation, allowing the resumption of regular menstrual cycles. Patients with PCOS have additional metabolic, gynecologic and behavioral risks and should seek treatment even outside of desiring fertility. Treatment of PCOS for those desiring fertility involves the use of fertility medications to induce ovulation. The first step is usually Clomiphene Citrate (Serophene), although a significant portion of women will not respond to this medication. Injectable gonadotropins (Gonal-F, Follistim, Bravelle) can also be used and will always induce ovulation. However, these patients are at high risk for multiple gestations (twins and greater) and of developing a dangerous condition known as severe ovarian hyperstimulation syndrome (OHSS), which if wrongly treated, can be life endangering.

9. What is a Luteal Phase Defect?

Following ovulation, the remainder of the dominant follicle transforms itself into a structure called the Corpus Luteum (CL), which produces progesterone. The purpose of progesterone is to prepare the uterus to accept and support an early pregnancy until it is able to sustain itself at around 8-10 weeks of gestation. The life span of the CL is predetermined to be 12-13 days, unless rescued by a signal from the early pregnancy. If no pregnancy occurs, the CL stops making progesterone and

menses ensues 1-2 days later. For most women the length of the second half of the menstrual cycle (the luteal phase) is constant at 14 days. A small percentage of infertile women (3-4%) have a shortened luteal phase. This may result in the loss of pregnancy support before the budding pregnancy has a chance to signal the ovary that it is there. The lining of the uterus (the endometrium) has a specific appearance that changes throughout the menstrual cycle, such that a biopsy of the lining a few days prior to expected menstruation, can accurately date endometrial development. A 3 or more day difference between endometrial dating by biopsy and cycle day as determined by the start of the next menstrual period is indicative of a luteal phase defect (LPD). Sequential mid luteal progesterone levels < 10 ng/dl can also be used to diagnose a LPD. Luteal phase defect can be treated with Clomiphene Citrate, Progesterone supplementation or hCG injections.

10. What is the role of cervical mucus?

The female body is anatomically unique in that a passageway connects the external environment, via the vagina, through the uterus and fallopian tubes with the woman's pelvic cavity. Cervical mucus, which is normally thick and sticky, acts like a cork, to prevent bacteria from entering the uterus and gaining access into the body. Around the time of ovulation and under the influence of estrogen, the mucus becomes watery, thin and stretchy to facilitate the entry of sperm into the reproductive tract. This change in the consistency of the mucus is the basis of the "rhythm method" of contraception. However, in some women the mucus never becomes receptive to the sperm, preventing the sperm from reaching the egg. In addition, some women make antibodies against their partner's sperm, immobilizing them in the mucus and destroying them. Abnormalities of the cervical mucus can be diagnosed using the post coital (Huhner) test (PCT). Hostile mucus can be bypassed through the use of intrauterine insemination. The presence of significant antisperm antibodies should be treated with IVF.

11. What is a Post Coital (Huhner) Test?

The post-coital test (PCT) evaluates the interaction of the sperm with the cervical mucus. A small sample of mucus is removed from the cervix 6-18 hours after sexual intercourse and evaluated under a microscope for the presence of motile sperm. The presence of 6-10 progressively motile sperm/ high power field is indicative of a good sperm/mucus interaction. However, the test must be performed just prior to ovulation so that the mucus will be receptive (thin and stretchy). The most common explanation for a poor test is improper timing. Sperm that are "stuck" to one another or simply "quivering in place," rather than moving forward purposefully often suggests the presence of antisperm antibodies. Intrauterine insemination (IUI) is recommended for the treatment of repeatedly poor PCTs in the face of a normal semen analyses. The presence of significant antisperm antibodies should be treated with IVF.

12. How is male factor infertility treated?

The treatment of male factor infertility is one of the true success stories in the field of assisted reproduction. Disorders of sperm quality range from a low count or motility to a complete absence of sperm production. Deformities of the sperm cell shape (morphology) are also important to its ability to fertilize the egg. Mild abnormalities of semen parameters can be effectively treated using techniques that "wash" out the seminal plasma and improve the concentration of normally shaped

motile sperm, which are then transferred to the uterus via an intrauterine insemination. However, for more severe conditions this treatment is inadequate. With a total motile cell concentration of less than 10 million cells per ml or a normal morphology of less than 4% by strict criteria, the chance of fertilization failure is very high, even with IVF. The invention of Intracytoplasmic Sperm Injection (ICSI) has revolutionized the treatment of male infertility, by achieving high rates of fertilization in patients who previously would have had little hope of conceiving. Treatments advocated in the past for male infertility such as Clomiphene, gonadotropin injections, hCG injections, and/or ligation of a varicocole have less of a role in the era of ICSI. Patients with previous vasectomy, especially greater than 10 years, are at great risk of forming antisperm antibodies and should also be treated with ICSI. Even certain patients with complete absence of sperm in the ejaculate may be able to father their own children through a simple procedure, in which sperm is extracted directly from the testicle, called Testicular Sperm Extraction (TESE).

13. What is Intrauterine Insemination and who needs it?

Intrauterine insemination (IUI) is a simple, painless procedure in which a small sample of highly concentrated motile sperm is placed in the uterus through a thin catheter at the time of ovulation. The sample is produced by masturbation after 2-3 days of abstinence and is "washed" in the laboratory to remove the seminal plasma and non-motile sperm. Washed sperm are highly active, but do not survive long. It is therefore, important that the IUI be timed as close as possible to the time of ovulation, so that the sperm are waiting for the egg when it arrives in the fallopian tube. Proper timing can be achieved using an ovulation predictor kit, which will predict the time of ovulation within 12 hours, or by using an injection of hCG, which causes ovulation to occur 24-36 hours later by mimicking the natural LH surge. Ultrasonographic monitoring of follicular development is often used to determine the timing of the hCG injection. IUI is indicated to treat cervical factors caused by poor mucus quality (which includes most patients on Clomiphene), cases of unexplained infertility and sometimes also mild male factor infertility. IUI is not helpful in cases of moderate to severe male factor, or in the presence of significant tubal disease, which should be treated with IVF. IUI is almost always performed in conjunction with gonadotropin therapy ("fertility drugs"), therefore there is a risk of multiple pregnancies. Most experts agree that a trial of IUI needs more than one cycle, but it is seldom practical to continue for more than 3 cycles of treatment, as superior results can be achieved with IVF.

14. What is Clomiphene and who needs it?

Clomiphene citrate (Clomid, Serophene) is an oral fertility medicine. Related in structure to DES, it acts as an anti-estrogen that tricks the body into producing more FSH, leading to improved follicular development. Clomiphene works best for patients who do not ovulate, helping them to produce a dominant follicle. In other women it can help to develop two or more follicles, improving the chances of conception in any given cycle. However pregnancy rates are not drastically improved. A success rate of 8-10% per cycle is generally reported, which is usually better than the couple could expect to achieve on their own, but less than the 15% expected in the general population. The benefits of Clomiphene include its low cost and ease of administration (oral). Negatives include anti-estrogenic effects on the cervical mucus, which usually require the addition of intrauterine inseminations, and on the endometrial lining, which may decrease the chance of implantation. The risk of twins is slightly increased with Clomiphene, 8-10%, compared to 1% in the general population. Despite its

negatives, Clomiphene is a good starting point in the treatment of many infertile couples. However, the majority of the effect is seen within the first three cycles of treatment. If a pregnancy has not occurred after 4-6 cycles, it is time to move on to more aggressive therapies.

15. What is In Vitro Fertilization (IVF)?

IVF is a procedure first developed in 1978, in which a woman's ovaries are stimulated with fertility medications to produce multiple mature eggs, which are then removed from her body and are fertilized in the laboratory with her partner's (or donor) sperm. The resulting embryos are cultured for 3 or 5 days and the best 2 or 3 are then transferred back into her uterus.

16. Who needs IVF?

Absolute indications for IVF include fallopian tubes damaged by PID, blocked fallopian tubes, moderate or severe male factor infertility, unexplained infertility that is unresponsive to conventional treatment and, endometriosis in women over 35years. Maternal age >40 is a relative indication because of the rapid decline in fertility that begins at this time. Young women who do not ovulate due to a condition called polycystic ovary syndrome (PCOS) are at risk for high order multiple gestations (triplets or higher) and IVF is indicated to control the number of embryos that implant into the uterus. Endometriosis is a condition in which the lining of the uterus passes backwards into the pelvis where it can stick to the ovaries, bowel, uterus and pelvic side walls to cause pain, scar tissue, pelvic adhesions and inflammation. At advanced stages, with severe adhesions, IVF is absolutely indicated, however, even at milder stages IVF is relatively indicated due to the inflammatory effects on the endometrial lining

17. What is Intracytoplasmic Sperm Injection (ICSI)?

ICSI is a procedure developed in Belgium in 1993 that has revolutionized the treatment of male factor infertility. Using ultra fine instruments, it is possible to select a single sperm cell and inject it into the egg to cause fertilization without damaging the egg. Before ICSI there was no effective treatment for poor sperm other than to use a donor. In the era of ICSI, male factor patients have the highest success rates of all patients treated for IVF.

18. What is endometriosis?

The lining of the uterus is called the endometrium. When endometrial tissue is found in places other than its normal location it is called endometriosis. There are several theories as to the etiology of endometriosis, but the exact cause is unknown. The most popular theory is called retrograde menstruation. This theory asserts that some endometrial tissue, which would normally be sloughed through the vagina as menstrual bleeding, passes backwards through the fallopian tubes into the pelvic cavity where it can attach to the ovaries, uterus, bowel, and other intra abdominal structures, causing pain, scarring, pelvic adhesions and inflammation. Approximately 30-40% of all women will have some evidence of endometriosis at laparoscopy, which is the only sure way to diagnose this disease. Endometriosis is a progressive disease that is fueled by the female hormone estrogen.

19. What are the symptoms of endometriosis?

The symptoms of endometriosis are quite variable. Most commonly, women report pain associated with their periods, which begins prior to bleeding and lasts for more than 48 hours. Pain can also occur mid cycle at the time of ovulation. In addition endometriosis can present as pain during intercourse, especially on deep penetration, or as pain with bowel movements or urination. However the amount of pain does not necessarily correlate with the amount of disease. Some women have no pain, but are found to have severe disease, while others suffer significant pain, but only have a small amount of disease.

20. How do I know if I have endometriosis?

Symptoms of cyclic pain are suggestive of endometriosis, but are nonspecific, as a majority of women report some pain with their periods. Ultrasound can identify large ovarian cysts, called endometriomas. These are indicative of a more severe disease state, but ultrasound cannot identify early stages of disease. The only way to truly diagnose endometriosis is surgically, usually by laparoscopy.

21. How does endometriosis affect fertility?

Endometriosis can affect fertility in two ways. At early stages, endometriosis appears to affect fertility through its effects on the immune system, while at advanced stages, there is an additional mechanical blockade. In the presence of severe disease, there is often scarring and pelvic adhesions that block the fallopian tubes, preventing the egg from reaching the sperm and the uterus. Adhesions can cover the ovary like plastic wrap and prevent the ovulated egg from escaping the ovary. Adhesions may also fix the fallopian tube in place, preventing it from capturing the egg, even though it is open. Large endometriomas can compress normal ovarian tissue, reducing the number of good quality eggs. Over zealous surgical treatment can also reduce the number of eggs when normal tissue is inadvertently removed or destroyed or by subtle damage caused to the ovarian blood supply. IVF is indicated in the presence of severe disease. It is well known that surgical or medical treatment of severe endometriosis improves the outcome from IVF, while its benefit in early stage disease has been questioned. However, we do know that patients with all stages of endometriosis have decreased fertility compared with age matched controls. Even at mild stages, endometriosis causes an inflammatory reaction. The resulting activation of the immune system may lead to an abnormal immune response in the endometrium that could prevent implantation or lead to embryo destruction. IVF may also be indicated in the presence of early stage endometriosis in the presence of an abnormal immune response, due to the involved nature of treatment.

22. What is the treatment for endometriosis?

Endometriosis can be treated surgically or medically. The first line treatment for pain is usually over the counter or prescription strength analgesics such as Ibuprofen (Advil) or Naprosyn (Aleve), which can be given presumptively, based on symptoms without a definite diagnosis. If these medications are insufficient at relieving the symptoms, the next step is a laparoscopy for diagnosis and treatment. Surgery is the best treatment for the pain of endometriosis. Small lesions can be burned with cautery or vaporized using a laser. Pelvic adhesions can be removed. Large endometriomas should be removed along with their cyst wall to prevent recurrence. However, endometriosis is a progressive

disease and new lesions will develop after surgery as long as the patient continues to produce estrogen. Medications such as Lupron and Danazol or high dose Progesterone can be used to control disease progression, although each of these have side effects which limit their usefulness. Regarding fertility, patients with advanced disease exhibiting pelvic adhesions and endometriomas should strongly consider IVF, especially over the age of 35. All patients with endometriosis should be evaluated for the presence of an underlying abnormality of the immune response that may warrant treatment.

23. Does endometriosis always need to be treated?

The treatment of endometriosis centers on two issues, pain and fertility. Pain warrants treatment regardless of stage. If fertility is the main concern, then advanced stages should be treated surgically; pelvic adhesions should be removed and the integrity of the tubal anatomy should be restored. However, following tubal surgery there is a high incidence of the tubes becoming re-blocked and this type of surgery is only recommended in young patients for whom IVF may not be a viable option. Mild endometriosis does not appear to mechanically affect the outcome of fertility treatment and does not necessarily need to be treated surgically. However, patients with endometriosis of all stages should be evaluated for an underlying abnormality of the immune response that could affect implantation and may need treatment of its own.

24. What is the relationship between reproductive failure and immunologic dysfunction, and how do we treat this problem?

Patients undergoing assisted reproduction may experience failed IVF cycles, implantation failure, clinical miscarriages, or other pregnancy wastage on the basis of pathologic immune processes. Clear evidence now exists to support the fact that the patients with serologically demonstrable levels of antiphospholipid antibodies (APA) may benefit from immunotherapy in selected cases. The presence of APA positivity in association with female infertility may, in fact, represent a biologic marker for the presence of elevated NK cell activity (NKa). This is especially true when IgG and/or IgM-related aPE and aPS are present. In APA+ patients with NKa, improved pregnancy rates and pregnancy outcome may be achieved by the administration of intravenous immunoglobulin G (IVIG) in prescribed doses. Finally, other perturbations of the immune system, including activation of T cells and polyclonal B cells, antithyroid antibodies for thyroglobulin and the microsomal fraction may represent additional immune markers, for which IVIG treatment may be beneficial.

25. What is laparoscopy?

Laparoscopy is an out patient (one-day) surgery in which a thin telescope-like instrument is inserted into the abdominal cavity through the belly button. Using this instrument (the laparoscope), the physician is able to visualize the abdominal/pelvic contents, including the uterus, fallopian tubes, ovaries, bowel, appendix, liver and gallbladder. Additional small (5mm) incisions in the bikini line are also often necessary to help with the manipulation of internal organs. Laparoscopy can be used to treat most gynecologic and infertility problems for which surgery is required. Such problems include the removal of pelvic adhesions, ovarian cysts, some types of uterine fibroids, swollen tubes, tubal pregnancies, treatment of endometriosis, and the documentation of tubal patency. The recovery time following laparoscopy is much less than with standard surgery (days compared to weeks). The

complications of laparoscopy are the same as with all types of surgery and include, infection, injury to adjacent organs such as the bowel or bladder and blood loss that may require a blood transfusion. There is also a small risk that it will be necessary to open your belly to fix a problem that cannot be addressed through the laparoscope, but this is extremely rare.

26. What is hysteroscopy?

Hysteroscopy is an out patient (one-day) surgery in which a small telescope-like instrument is inserted into the uterine cavity through the vagina. Fluid is then used to distend the uterine cavity and abnormalities such as polyps, scar tissue and intrauterine fibroids can be visualized and treated. Hysteroscopy is often performed in the office with only mild anesthesia. The recovery time from surgery is extremely rapid. Most patients are ready to resume normal activities the same day. The risks of hysteroscopy are the same as for any surgery and include infection, bleeding, and injury to adjacent organs such as the bowel or bladder. Hysteroscopy has the additional small risk of making a hole in the uterine wall. This complication occurs rarely and usually has no bearing on future fertility.

27. What is Sonohysterography?

Sonohysterography (fluid ultrasound, hydrosonography) is a simple, relatively non-invasive technique for imaging the uterine cavity. The procedure is performed in the office without anesthesia (although 600-800mg of Ibuprofen 20 minutes prior to the exam helps to relive cramping). A thin catheter is introduced into the uterus through the vagina. A transvaginal ultrasound is then performed while 10-20 cc of saline is injected into the uterus. The cavity is distended by the fluid, revealing the presence of intrauterine fibroids, adhesions or small polyps, which are sometimes missed on hysterosalpingogram (HSG). The distention of the uterus causes some cramping that is well tolerated by most patients and which dissipates rapidly once the procedure is finished. Fluid noted in the pelvic cavity indicates that at least one tube is patent. Lesions detected on sonohysterography cannot be treated at the same time, but the procedure is quick, costs much less than a hysteroscopy and the majority of women will have a normal endometrial cavity. However, if abnormal pathology is suspected, it may be preferable to proceed directly to hysteroscopy.

28. Do blocked tubes need to be removed in preparation for IVF?

Tubal damage as a result of prior infection, endometriosis or previous pelvic surgery is one of the most common causes of fertility. Tubal blockage can occur in several locations. Often the distal ends of the tubes are obstructed, while the openings into the uterus are still patent. In many cases the tubes fill with fluid and are called hydrosalpinges. For most patients with significant tubal disease, surgery is not indicated to improve fertility outcome in the era of IVF. The exception is the presence of hydrosalpinges. Recent literature has shown that the fluid in swollen tubes, which contains dead cells and other noxious products, is highly toxic to embryos. In addition, the fluid can leak back into the uterus and cause a mechanical barrier to implantation. Patients with hydrosalpinges should strongly consider having their tubes removed or ligated prior to undergoing treatment. It is often hard for patients to accept that their tubes will be gone, as it means that conception is impossible without assistance. However the presence of hydrosalpinges means that the tubes are non-functional, and the chance of conceiving normally is extremely low.

29. Should I have surgery to reconnect my tubes?

Depending on the method used, a tubal ligation can often be reversed. Following surgery the tubes will be open around 80% of the time and a woman will have a 75-80% chance of conception in her reproductive lifetime. Once the tubes are reconnected, the couple will often not need any further treatment. However the cost of this procedure can easily exceed $15,000, which is usually not covered by insurance. In addition, this surgery is performed through a laparotomy incision (a C-Section cut), and requires a 6-week recovery period. Tubal reversal is a reasonable choice for younger women, (less than 35), who would like more than one more child or for women who just need to have intact tubes to feel "complete." For most women reversal of a tubal ligation is not the best option. IVF can offer pregnancy rates of up to 50% in one month of trying and over 80% in three months. The cost of IVF is less than that of surgery and may be covered all or in part by insurance. In addition, once pregnant, there is no need to consider contraception.

30. What are injectable gonadotropins and who needs them?

Gondatropins are hormones which naturally occur in the pituitary gland. They are produced each month and are responsible for the hormonal events which lead to the menstrual cycle. The main gonadotropins (what stimulates the gonads to work), are follicle stimulating hormone (FSH) and luteinizing hormone (LH). Pharmaceutical companies have been able to purify and manufacture these agents, and we use them all the time in our work. They are either used as part of an IUI cycle, or to grow the eggs as part of controlled ovarian stimulation as part of IVF.

31. What are the risks of taking fertility medications?

The biggest risk of taking fertility medicines relate to multiple pregnancies. This is particularly true in patients being treated with IUI cycles, as opposed to IVF cycles, because, in IVF, the number of embryos that are transferred can be controlled. Other risks include Ovarian Hyperstimulation Syndrome (OHSS). This is seen most often in patients with PCOS. It is essential for doctors prescribing these medicines to monitor the patients carefully and also be experienced in their administration. With respect to the risk of cancer and fertility medications, at the present time, there is no definitive evidence that these medications cause cancer. Instead, it is more likely that the underlying disease which causes the patient to require treatment for fertility is more likely to predispose to ovarian malignancy. Notwithstanding this fact, it is important that patients not be exposed to fertility medicines repeatedly over prolonged periods of time. If a designed treatment is not working, there are usually reasons and it is better to select and alternate approach to therapy.

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This handout is intended as an aid to provide patients with general information. As science is rapidly evolving, some new information may not be presented here. It is not intended to replace or define evaluation and treatment by a physician.