

The Basic Infertility Investigation



**Southern Ontario
Fertility Technologies**

Introduction

The first visit to S.O.F.T. is a **consultation** with Dr. Martin or Dr. McNaught. Your **consultation** will involve a detailed medical history, a review of past investigations and treatment when these have been sent by your doctor. A directed physical examination is sometimes done if necessary. Usually, any investigations which have not already been done are arranged for you. Fortunately, these can usually be **completed in the next cycle after the consultation and treatment can be started promptly.**

A **“basic infertility investigation”** will be completed. A basic infertility investigation involves testing of three things: the woman’s hormone status (day 3 blood work), a test of the Fallopian tubes, and a sperm count. **Almost without exception, the whole basic infertility investigation is completed in one cycle.** Sometimes the cause of the infertility is obvious. For example, if the man has no sperm or the woman has no cycle. However, we will still recommend all three aspects of the investigation.

Shortcomings - The Limited Nature of Infertility Investigations

Once the basic infertility investigation is completed, there are not a lot of other effective investigations.

Further investigations can include an ultrasound, a laparoscopy or tests of sperm function.

Laparoscopy is indicated by history, physical examination, hysterosalpingogram or ultrasound findings that indicate it could possibly be helpful. (A complete information sheet is available on laparoscopy.)

Tests of sperm function are offered in some infertility clinics but are usually performed as part of the sperm washing procedure for intrauterine insemination at S.O.F.T.

Investigations are very limited for infertility. We can determine that the tubes are open, sperm are present and that ovulation is occurring. However, **there are many steps to a successful pregnancy for which we have no diagnostic test.** Our approach is to offer treatment in a progressive fashion so that more and more of these steps, which cannot be tested, are instead bypassed by the treatment.

Unfortunately, many couples will fall into the **“idiopathic”** infertility group. Idiopathic means “no obvious cause”. That doesn’t mean there isn’t a cause but that the cause doesn’t make itself clear during our limited investigations.

Day 3 Blood work

Random testing of your reproductive hormones can be informative but at S.O.F.T. we prefer to do it on day 3 of your cycle. Day 1 is the first day of the cycle requiring more than a panty liner as long as it occurs before midnight. On day 3 the hormones are at their lowest or baseline levels.

The levels of FSH and LH are included. These are the two hormones produced in the pituitary gland which are responsible for cycling the ovaries and indirectly the uterus. They are therefore the cause of menstrual cycles. Usually both hormones are between 1 and 10 and they will almost always be normal if the cycles are perfectly regular. However, if there is irregularity

of the cycles, these hormone levels will usually reveal the cause. If they are both very low, irregular cycles (or no cycles) may be due to inability of the pituitary to make these hormones (hypothalamic ammenorhea). If both hormones are high, it may indicate ovarian failure. Most of the time they are normal and this indicates the irregular cycles are from miscommunication between the pituitary and the ovaries (often referred to as polycystic ovary syndrome).

If the cycles are irregular you will probably be asked to do a fasting blood sugar with an insulin level. With this test we are looking for insulin resistance. Insulin resistance is not diabetes. It occurs when the body has to make more insulin than usual to keep the blood sugar normal. It occurs in 60% of women with irregular cycles.

If you are 38 years old or older, we may add an estradiol to your blood tests. Estradiol is made by the ovaries. Some reports indicate an increased estradiol may indicate a decreased ovarian reserve (running out of eggs). However, increased estradiol may just suppress FSH. If the FSH is falsely lowered it may give incorrect reassurance that there are lots of eggs left.

Semen Analysis

The mainstay of determining if male infertility is present is a semen analysis. This involves the collection and examining of the fluid ejaculated from the penis at the time of climax. Two semen analyses are usually requested for an infertility investigation. This is because semen samples vary widely. **The same male may produce samples, which vary 1,000%!** Sometimes an abnormality will be apparent on one sample but not the other.

A normal semen analysis should have a volume of at least 1.5 ml, and a concentration of at least 20 million sperm per ml of fluid.

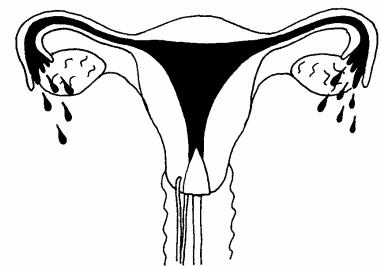
At least 50% of the sperm should be moving and at least 30% should appear normally formed. Sperm morphology (are the sperm normal in appearance?) is the least predictive of the values and the hardest to determine, especially in labs where the technicians may not be used to evaluating sperm morphology. We also like to see a total of 40 million moving sperm in the total ejaculate. These

Parameter	Normal Level
Volume	1.5 ml or greater
Concentration	20 million sperm / ml or greater
% Motility	50% or greater
% Normal Appearance	30% or greater
Total Motile Count	40 million sperm or greater

guidelines are from the **World Health Organization** and serve as a good screening test to alert us to the possibility of male factor infertility. However, a normal semen analysis does not mean that there isn't a problem and spontaneous pregnancies can occur with abnormal sperm tests.

Tests of tubal Patency

A **hysterosalpingogram** involves the injection of dye (liquid that can be seen using x-rays) through the cervix into the uterus and under normal conditions can be seen to flow out through the fallopian tubes. It is a test, which for some women, may be unpleasant but necessary to complete the **“basic” infertility investigation or an investigation of recurrent pregnancy loss.**



The test is **much like a Pap smear** in that it requires the insertion of a speculum in the vagina so that the opening of the uterus or cervix can be seen. The cervix will be wiped with some antiseptic solution. Very rarely a tenaculum (an instrument to grab the cervix) is used. This is only necessary about 2% of the time if the cervix is at a difficult angle or hard to reach. When the tenaculum is necessary it may cause slight discomfort but it is usually mild and short lived.

The dye is injected into the cervix using a long metal tube with a cone-shaped end attached to a syringe. The cone is pushed against the cervix to make a seal and the dye is injected with the syringe. There may be some **cramping** as the dye enters the uterus but we try to minimize this by injecting the dye very slowly. Women who experience severe cramping during their menstrual cycle appear to be more prone to cramping during the procedure. The cramping can be lessened (usually by 70% to 90%) by taking **ibuprofen** 200-milligram tablets (Advil® or Motrin®).

The hysterosalpingogram allows us to see both the shape of the cavity of the uterus and the fallopian tubes. It is currently the standard of care for initial examination of the fallopian tubes. However, other tests are also available. A full information sheet is available on the hysterosalpingogram.

Hysterosonogram refers to the injection of saline into the uterine cavity while using ultrasound. Hysterosonograms are often used if there is some suspicion of finding in the uterine cavity. They are excellent at demonstrating polyps or sub mucus fibroids. They may also be employed to look more carefully at a bicornuate uterus or uterine septum. Hysterosonograms are available in the ultrasound department of the S.O.F.T. clinic. We are developing a full information sheet on hysterosonograms.

Contrast sonohystogram refers to the use of saline with suspended bubbles to attempt to see both the uterine cavity and to determine whether the fallopian tubes are open. This may be available at the clinic in the future as an alternative to a hysterosalpingogram. Presently, hysterosalpingograms provide better information about tubal patency.

Laparoscopy is day surgery which involves small incisions in the abdominal wall so that the abdominal cavity can be visualized and some procedures can be done. Laparoscopy is not indicated in the initial basic infertility investigation unless there are specific indications for it. A full information sheet is available on laparoscopy.

A **pelvic or vaginal ultrasound** is sometimes indicated in the initial investigation. It is often done prior to your referral to the S.O.F.T. clinic. Many times, vaginal ultrasounds will be part of your treatment as they are used to monitor both intrauterine insemination and in vitro fertilization cycles. However, if your treatment initially will only involve less intense treatments like ovulation induction or if your history or physical indicates that it may be necessary, a vaginal ultrasound may be done in the clinic immediately after your hysterosalpingogram. A full information sheet on this initial ultrasound is available.

How We Start

If the treatment options are fairly obvious the treatment is **sometimes started in the same cycle as the investigations are done**. You will be given information sheets about everything that is recommended (except for blood tests and semen analysis for which you will be given requisitions).

A normal hysterosalpingogram demonstrating a normal shaped cavity and both tubes with fill

Except in circumstances where there has been a recent (within a year) test of the Fallopian tubes, a second visit will be arranged on the same day as the hysterosalpingogram (HSG). At this visit, the initial plan for treatment is formulated or confirmed if it was actually started in your first visit.

The Concept of Multiple Causes

Generally in medicine an illness has one cause. This is usually not the case with infertility.

The majority of couples will have no definitive diagnostic cause but some tests are suspicious. For example, there may be a normal sperm count but one which is consistently in the lower end of the range. Or there may be regular cycles but they may be shorter than usual (24 days) or vary a little with each cycle (27 to 31 days). Or the hysterosalpingogram may demonstrate one tube open but not both.

We believe about **7% of females and 5% of males have some sub fertility factor.** This does not mean that they are infertile but that they may have something that causes them to need more tries to become pregnant. These sub-fertility factors are not usually apparent on our investigations. If these sub-fertile individuals got together randomly, you would expect to find only one in three hundred couples ($7\% \times 5\% = 0.35\%$) with a sub fertility factor in both the male and the female. In fact, we find over 30% with a sub fertility factor in both members of the couple. The reason for this is that an extremely fertile female will overcome a mild sub fertility factor in her male partner. Similarly, an extremely fertile male will overcome a mild sub fertility factor in his female partner. These couples never present to a fertility clinic such as S.O.F.T... However, if a mild sub fertility factor exists in both the male and female, these multiply rather than just add up and this couple will require help because of a delay in getting pregnant. **It really is a couple's problem and not one or the others fault!!!**

Treatment as a Diagnostic Procedure

As stated before, many times **no abnormalities will be found in the basic infertility investigation.** This does mean that there isn't a cause for the infertility but it just means that the usual tests will not detect it.

Infertility investigations are very limited compared to the wide scope of infertility treatment. There are many steps to a successful pregnancy, many of which there are no diagnostic tests available. For instance, no reliable test is available for cervical factor infertility. Also, no test is available for the function of the fallopian tubes. Perhaps, some infertility is caused by abnormal transport of sperm, eggs, or embryos along the fallopian tubes. Perhaps, some infertility is caused by the failure of the fimbria of the fallopian tubes to recognize and pick up the ovulated egg.

Often, we will start with the simplest treatment. For instance, ovulation induction may overcome a very subtle problem with the ovulation. However, after several tries with this we may proceed to intrauterine insemination. Intrauterine insemination will treat rather than diagnose problems with cervical factor fertility and subtle problems with the sperm that may not be immediately obvious from the semen analysis. Combining ovulation induction with intrauterine insemination will overcome both of these problems.

If several tries and intrauterine insemination are not successful, Controlled ovarian hyperstimulation may be added to the intrauterine insemination procedure in an attempt to produce multiple eggs. By producing multiple eggs, we may over, problem with a quality.

If several tries with intrauterine insemination and controlled ovarian hyperstimulation are not successful, the couple may be offered in vitro fertilization. In vitro fertilization may overcome undiagnosed problems with sperm, egg or embryo transport through the fallopian tubes. Sometimes, because the eggs are examined under the microscope, we can diagnose problems with egg quality. Also, sometimes, unexpected problems with fertilization can be discovered. In addition to this, sometimes we will observe problems with embryo development.

Conclusion

Everyone with infertility should have a basic infertility investigation. Even though there may be an obvious problem, they sometimes will be aggravated by additional problems. Infertility investigations are limited compared to infertility treatments that are available. Therefore, once the basic infertility investigation is completed, we proceed with treatment. Simple treatment is begun quickly and if it is unsuccessful, more complex treatments are added. A few more complicated investigations may be considered along the road but treatment is progress until a pregnancy occurs. Therefore, even though the steps are considered treatment they may add to our understanding of the underlying diagnostic problem.

© James S. Martin M.D.
S.O.F.T.
555 Southdale Rd., E., Suite 107,
London, ON, N6A 1A2
Tel: (519) 685-5559

Check out our web page at www.soft-infertility.com