Pregnancy Loss - Miscarriage

Southern Ontario
Fertility Technologies

Introduction

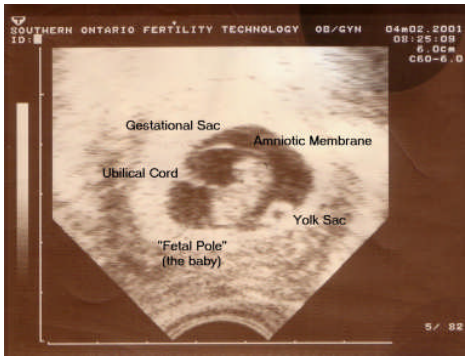
Early pregnancy loss can occur because of **miscarriage (spontaneous abortion)** or because of **ectopic pregnancies**. It is one of the most common events that can befall the reproductive-aged woman attempting a pregnancy. Miscarriage, which is the unplanned loss of a pregnancy before 20 weeks or a fetal weight of 500 grams, occurs in **10%-40% of all "clinical pregnancies".** Early implantation of an embryo and failure of that embryo to continue to develop may occur in up to 60% of all fertilization events and presents as a late period and referred to as a biochemical miscarriage. Ectopic pregnancies occur in about 1.5% of all pregnancies and certain risk factors can make them even more likely.

Sometimes, the many terms used to describe a miscarriage can be confusing. The important thing to remember is that any time a positive pregnancy test is registered, a pregnancy has occurred. It has the same emotional and prognostic significance no matter what form has occurred.

Whenever a positive **pregnancy test occurs, it means that a pregnancy has occurred** and the potential of a baby, at the time of miscarriage, has been lost. Even though it is common, each occurrence causes tremendous emotional pain and can cause self doubt and questions about the future. At S.O.F.T., we are here to help you get through this tragic event and help you move on to a successful pregnancy.

Early Pregnancy Ultrasound

An early pregnancy ultrasound is usually performed at S.O.F.T. on every pregnancy. This test cannot predict the future but a completely normal ultrasound usually means that there is over a 90% chance that the pregnancy will continue.



Discovering a miscarriage

At the S.O.F.T. Clinic you are usually very closely monitored for a possible pregnancy if you are undergoing fertility treatment. For instance, if you are taking clomiphene or femara, and you period doesn't come within 35 days of the last period; you will have a pregnancy test. If you are undergoing intrauterine insemination (IUI) or in vitro fertilization (IVF) you will have a pregnancy test 14 days after your insemination or transfer. The ***B*HCG** is a hormone in your blood that can be measured and is usually only produced by pregnancy. Once it is positive, we will often measure it again in 48 hours. Usually with a "good" pregnancy, we will observe a 66% increase in the *B*HCG in 48 hours. However, this is only a lab test and the original research study that this prediction was based on followed less than 50 pregnancies. Usually the rise in *B*HCG with miscarriages or ectopic pregnancies is less. At this early stage, an ultrasound is not helpful as the pregnancy is too small to be visualized. A pregnancy loss at this stage is called a **biochemical miscarriage**. When the *B*HCG falls, usually some vaginal bleeding occurs. The

longer the time from your expected menstruation and the higher the peak BHCG became, the more bleeding can be expected. However, usually at this early stage, the bleeding is only slightly heavier and slightly longer than the usual period. In fact, if you were not being monitored as closely, you might not realize that a pregnancy had occurred.

Sometime a pregnancy will occur, **BHCG's will rise appropriately but bleeding will start**. Many women will have bleeding in the first part of their pregnancy. This is often referred to as a **threatened abortion** or miscarriage. At the clinic, we see this in approximately 18% of all pregnancies! However, over 50% of women who have vaginal bleeding in the first trimester (up to 12 weeks) will go on to have a normal pregnancy. Often we will monitor this with serial BHCG's. Ultrasound can be helpful, after you have missed your period by 14 days or if the BHCG is over 1,000. At this early stage, we will probably not see a heartbeat or perhaps even a fetus but can sometimes confirm that the pregnancy is inside the uterus and therefore exclude an ectopic pregnancy.

Under some circumstances, with a threatened abortion, you will be prescribed **vaginal progesterone**. This may be in the form of an oral tablet (Prometrium) which is widely available in all drug stores or a compounded vaginal suppository which is only available from pharmacies with a compounding pharmacist on staff. Both of these are available through the clinic. The evidence for vaginal progesterone helping once bleeding has started is not strong but both forms (Prometrium and suppositories) contain the same progesterone that your body makes and therefore will do no harm. Vaginal progesterone cannot maintain a pregnancy that should not go on. In other words, if the fetus is malformed or the chromosomes are wrong, the pregnancy will end despite the progesterone.

Sometimes, brisk bleeding will occur and the BHCG's will fall. In a few circumstances, **fetal tissue** will be pasted with the bleeding. **Many times, what is thought to be tissue is not**. Many times, a bleached clot or fibrin (the body chemical that holds the clot together) can look like tissue. The passage of the whole gestational sac or a small fetus is of course, unmistakable but don't assume the pregnancy is lost if lesser recognizable "things" are passed with the bleeding. If fetal tissue is pasted, this is often referred to as an **inevitable abortion**. If the whole gestational sac is passed, usually the bleeding will decrease and this is referred to as a **complete abortion**.

Sometimes if you experience excessive bleeding in early pregnancy, you will be examined vaginally. If your cervix (the opening to the uterus) is open, this is a bad sign. However, this physical sign can be very misleading especially in women who have already had a baby.

Traditional advise for women bleeding in the first part of there pregnancy has been bed rest. If you are bleeding heavily or emotionally distressed, rest is probably appropriate. However, there is no evidence that bed rest will make a difference.

At the S.O.F.T. Clinic, you will be offered an **early pregnancy ultrasound**. This is usually done at 40 days after conception. This is 54 days after your last menstrual period or 40 days after insemination or transfer. If you are bleeding or have had previous miscarriages, it may be done up to 10 days earlier than this.

Sometimes a miscarriage is first discovered at the time of this ultrasound. This is of course devastating news and can often leave you distraught and confused. Most of the time there has been some signs that the pregnancy is not good (slowly rising BHCG's, spotting or discharge). The presence of **pregnancy symptoms**, such as nausea (morning sickness), breast

tenderness, urinary frequency and fatigue are all reassuring. However, completely normal pregnancies can occur without any of these symptoms.

Sometimes you will be asked for a **repeat early pregnancy ultrasound**. This is of course very worrisome and can leave you "on pins and needles" for a week. The ultrasound is very time dependent. Sometimes a few days can make the difference of whether a heart beat is seen or not. At this early stage we measure the length of the fetus which is referred to as the crown-rump length. The crown-rump length can double in one week! Growth of the pregnancy can be reassuring but failure of fetal growth can be used to confirm a non-viable pregnancy.

Pregnancies are dated from the last menstrual period. However, a pregnancy begins when ovulation and fertilization occurs. If you are undergoing IUI or IVF we know when this occurred but if you are undergoing ovulation induction with clomiphene citrate or femara, late ovulations can occur and the pregnancy can be less far along than we originally calculate. This is when repeat ultrasounds are especially helpful.

What happens next?

Once it has been determined that the pregnancy is not viable, several different things can happen. If it is very early, your miscarriage may be only a late period. The longer the pregnancy lasts, the heavier and longer the period is likely to be. For example, most women who have a biochemical miscarriage (no ultrasound evidence of pregnancy) will have bleeding that is no more than double there usual bleeding in both length and intensity.

If ultrasound evidence of a pregnancy has occurred, bleeding may be more intense but is seldom enough to require hospital visits or blood transfusion.

Most miscarriages resolve spontaneously. Bleeding occurs and all evidence of the pregnancy disappears. The pregnancy test level (*B*HCG) returns to zero. Many times at S.O.F.T., because we want to begin fertility treatment again, we will "**follow the *B*HCG to zero**". This usually consists of weekly blood tests until it is zero.

It is sometimes surprising how long this can take! Occasionally this can take 4 months but the average is 6 to 8 weeks. This can be very frustrating, especially if you are anxious to get on with more treatment.

If the pregnancy does not resolve on its own, several options are available. The first is to use misoprostil. **Misoprostil** is a commonly used oral medicine. However, it can be used vaginally, either in its oral form or compounded into a vaginal suppository by a compounding pharmacist. Usually 400 to 800 micrograms is used, but the dose can be higher. It is put as high into the vagina as possible. At the S.O.F.T. Clinic your prescription usually has three suppositories. If the first one is put in place and brisk vaginal bleeding occurs, do not use any more as no more are required. If brisk bleeding does not occur the vaginal suppositories are repeated every 6 to 8 hours until it does. Usually only three are given and this is enough to precipitate things. **Bleeding with misoprostil can be intense**, especially if the pregnancy is further along. For this reason, we like you to administer it during the day so that if you are worried you can call the clinic (519-685-5559). It is usually better to take the day off work as sometimes, for a short period of time, tampons and/or pads will not keep up with the rate of bleeding. You may have to sit on the toilet for 30 minutes to an hour. Although it seems like a great deal of bleeding, it seldom drops your hemoglobin significantly and almost never requires medical attention. Call us if you are concerned.

The other intervention which can be done is a **dilatation and curettage (D&C)**. A D&C was done much more frequently in the past. A D&C is a minor surgical procedure usually requiring a general anesthetic. While you are asleep the cervix (opening of the uterus) is dilated and then the lining of the uterus is curetted out. The curettings are usually sent for a pathologic examination.

Before the D&C you should not eat or drink. The anesthetist will want you to have "nothing by mouth" (NPO) for at least six hours before your procedure. An intravenous (IV) will be started. The procedure itself takes only about 5 minutes. You will wake up in the recovery room, and then when you are sufficiently awake, will be moved to the outpatient area, and then when you are totally awake, will be able to go home.

After the surgery, there is often some continued vaginal bleeding but this should not be any more than your usual period. There isn't usually any pain as no incisions have to be made. A follow-up visit is done in one to two weeks at which time a repeat pregnancy test may be done.

Many women who are undergoing infertility treatment want to restart their treatment as soon as possible. The bleeding that occurs with the miscarriage is not a true period but if all goes well you next period will occur within 35 days of this bleeding. As long as the BHCG has returned to zero, you can physically begin infertility treatment again. However, psychologically, you may need to take a few cycles off to rest and recover. Everybody is unique and will have to determine this for themselves.

If your cycles were irregular before the miscarriage, they will likely be irregular afterwards. Therefore, if a period has not occurred within 35 days of your pregnancy test returning to zero, a pregnancy test can be repeated and you can be given medication to bring on your period.

The Emotional Changes

Everyone reacts to the loss of a pregnancy but **everybody reacts differently**. You should not apologize or feel badly for your reaction. At S.O.F.T., we all want you to achieve a successful pregnancy and **we all feel badly when you experience a pregnancy loss**. Unfortunately, there is probably nothing we can say or do for you that will help you feel much better. However, we will feel badly with you and be there for you in whatever way we can. If you need to take time, we will make time for you. If you need to return later to talk or to ask questions, we will arrange a time. If you would like counseling, we will help you arrange this.

As I said before, everybody is different. Some people will not want to talk about it and prefer to grieve privately. We will respect this. However, some people will grieve immediately and intensely! If you need to cry, don't be embarrassed about this; it is natural. Some of our patients feel they cannot cry because we are too busy for this. We are never to busy!!! **Don't be surprised if some of us cry with you but also don't worry about this**. Pregnancy losses are hard for us too but they are part of life and are more than made up by the joy we will share with you some day when a good pregnancy occurs.

Pregnancy loss may lead to feelings of **failure and guilt**. Although pregnancy loss is probably more common in couples with infertility, there is nothing you have done to cause it. There is no evidence that an activity, drink, food, or behavior will lead to pregnancy loss. It is common to think back to that drink you had on Saturday night or that heavy object you lifted. These things have nothing to do with the loss of the pregnancy.

Pregnancies are **usually lost because something was wrong with the pregnancy**. Over half of pregnancy losses have abnormal numbers of chromosomes. Still others contain other major abnormalities. Early pregnancy loss is nature's way of sorting out the pregnancies that should not go on. However, knowing this probably doesn't help much as the loss is occurring!

No matter how far along the pregnancy got and no matter how abnormal it may have been **it is natural to feel that this is the loss of your baby**. As soon as you're Beta HCG (pregnancy test) is positive it is natural to think of this as your baby. It is a real pregnancy and you have the right to feel despair and to grieve. Bonding to your baby can occur with the first indication of a positive pregnancy test.

It is helpful to **recognize your pregnancy as a baby**. Miscarriage is often referred to as a disenfranchised loss because many times it is minimized. There was no baby to see or touch. Friends or family may minimize the loss by saying things like, "There was no baby in the sac," or "You are young. You can try again anyway". Because of this often you bleed, cramp or even have your D&C in private. Others may not fully understand the extent of your loss. You may feel this as a lack of support from family and friends and feel very alone in your grieving.

At S.O.F.T. we recognize a miscarriage as the loss of a baby, no matter how early it occurred. If there is anything we can do to help you with remembering, we are happy to do this. For instance, if you would like a copy of the lab report with the positive pregnancy test, a printout of the ultrasound, ultrasound report or any other documentation, just ask us.

Loss of a pregnancy often **"snowballs" to include all the losses** associated with infertility and its treatment. This can lead to a fear of 'losing it' and not being able to continue with infertility treatments. Sometimes a short "holiday" from treatment is appropriate but always feeling able to discuss this with us is appropriate. Sometimes it can even start to include losses like the death of a parent or other close relative, the loss of a job, pet, or important belonging. This can be normal in the short term, but may progress to a depression if it continues. Depressions can and should be treated. Effective treatment can involve counseling, medications or both.

Men and women react differently to miscarriages. This is important to recognize as failing to do so can potentially cause problems in a relationship. Women will usually grieve immediately and openly. They will often involve their friends or family. Men, on the other hand, often keep their emotions hidden in order to appear strong. They will often see their role as remaining strong to provide support. Unfortunately, this is sometimes interpreted by their partner as caring less for their mutual loss. Acknowledging differences in grieving can be helpful for both partners as it lets the woman know she is not alone and the man know he is allowed to show his emotions. Sometimes, the male partner will postpone his grieving in order to stay strong and supportive. This is never good and can predispose to later depression.

A method of coping for many is trying to figure out why the pregnancy loss has occurred. Unfortunately, there are seldom answers! Discuss any concerns with us in this regard. Usually with a single miscarriage, investigations are not indicated as it is unlikely to recur. Sometimes, questions that may come up have a simple solution or explanation. Most of all try and stay positive and communicate any concerns.

Incidence of Miscarriage

We consider a clinical pregnancy one in which there are signs of pregnancy other than just a positive pregnancy test. This usually involves ultrasound evidence of a gestational sac in the uterus. A biochemical pregnancy is one in which the pregnancy test becomes positive but there are no other clinical signs of pregnancy other than the delayed menstruation. If we count the biochemical pregnancies, the incidence of pregnancy loss is doubled. Miscarriage is more common in **older women**. The chance of a clinical miscarriage at 20 years old is about 10% but at 40 years old is at least 40%. It is generally believed that miscarriage is **not generally more common in couples undergoing infertility treatment**. However, conditions such as polycystic ovary syndrome and severe male infertility may predispose such couples to higher rates of miscarriage. In general, if a pregnancy occurs during infertility treatment but ends in a miscarriage, it is a good sign that pregnancy can occur with that particular treatment. Once the miscarriage is resolved, you will probably be advised to continue with the same infertility treatment.

In General, 30% of pregnancies end in miscarriage.

The most common cause of miscarriage is an error occurring as the chromosomes from the mother and father first separate into half and then recombine to form the usual 46 chromosomes present in humans. **Loss of pregnancies with abnormal numbers of chromosomes is probably nature's way of selecting out the pregnancies that should not go on**.

A laboratory test that examines the number of chromosomes is called a **karyotype**. Tissue from an aborted fetus, cells from the amniotic fluid around a baby or blood from a patient can be cultured. When the cultured cells are dividing, they can be stained and examined under the microscope and the number of chromosomes can be counted. Additionally, each chromosome can be identified and minor structural abnormalities found. Karyotypes are expensive to perform and are not generally thought to be helpful if performed on a couple before three miscarriages or on aborted material.

Chromosomal mistakes of a random variety (I.E. unlikely to recur in the next pregnancy) are the most important contributor to all pregnancy losses. The frequency of chromosomal abnormalities in miscarriages that occurred in the first third of the pregnancy (up to 13 weeks) is felt to be 40 to 60%. After 13 weeks, the frequency drops to about 10%. Among stillborn fetuses, in the last third of pregnancy, chromosomal errors occur for 5 to 10% and in live born babies chromosomal errors account for just under 1%. Random miscarriages appear to often therefore be a system of biological "checks and balances" and may be responsible for maintaining the low rate of life-threatening congenital abnormalities encountered in liveborns.

When karyotypes are performed on miscarriages, over half have an incorrect number of chromosomes. Humans should have 46 chromosomes. Forty-four of these are termed autosomes and the remaining two are the sex chromosomes. A female has two X chromosomes and a male has an X and a Y chromosome. A large study found that 10% of miscarriages had 45 chromosomes, 44 autosomes and one X chromosome (45, XO). This is Turners Syndrome. Primary autosomal trisomies (an extra non-sex chromosome) occurred in 31%. An extra chromosome 21 is Down's syndrome. The remainder had a variety of other chromosomal abnormalities.

The vast majority of these chromosomal errors are random events and are not likely to occur again. They are due to errors in cell division or errors in the chromosomes coming together at the time of fertilization. In other words, they occur during the extremely complicated

reproductive process. They do however occur randomly at a higher incidence in older women. The increased risk of Down's syndrome in older women represents "the tip of the iceberg". The incidence of miscarriage increases with increased female age, becoming between 40 and 50% over age 40. Most of these miscarriages are from the increased burden of chromosomal errors.

Will It Occur Again ???

One of the major worries expressed by people experiencing a miscarriage is that there is something wrong with them that will make the miscarriages occur over and over.

A large clinical study looked at the risk of loosing a pregnancy based on past reproductive history. In women with no prior pregnancy losses, the incidence of miscarriage was **12.6%**. For those with second pregnancies where the first pregnancy had been lost, the incidence was **16.6%**. Of women who had had two previous pregnancy loses, **37.5%** experienced a loss in their third and **41.1%** in their forth pregnancy. The chance of a successful pregnancy is increased by 20% in women with at least one previous live birth. Therefore, with four pregnancy losses but one successful birth, the incidence of a pregnancy loss in the next pregnancy would be about 21.1%. This is a much lower rate than most people would expect in these circumstances.

Because pregnancy loss is so common, **the most common cause of more than one loss is the recurrence of non-repetitive cause**. In other words, bad luck two or three times in a row. However, after two losses we will do a recurrent pregnancy loss investigation. This investigation will be normal in 95% of couples. Even after three miscarriages, the chance of finding a recurring cause is less than 10%.

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