Breast Augmentation; a letter to my patients:

Breast implants were invented in the early 1960's by Dr. Frank Gerow and Dr. Thomas Cronin, two Plastic Surgeons from Houston, Texas. Interestingly, I went to Medical School at Baylor in Houston and had the privilege to work with Dr. Gerow. He was a true visionary. The movie "Breast Men",with David Schwimmer, was loosely based upon Dr. Gerow's practice with considerable artistic license taken by the screenwriter. That's a story for another day. The first implants were made from an outside shell of silicone rubber and contained silicone gel. They had a remarkably natural feel that very closely compared to normal youthful breast tissue. The major complication of silicone breast implants was scar formation around the implant, which made them get very hard and even, in some cases, painful. This is not surprising since all foreign objects that are placed into the body cause a scar capsule to form. However in the case of stainless steel plates for fractures or a pacemaker, no one cares if they are hard because they started out that way. In the case of breast implants, it occurred 80 percent of the time, which was a very big deal. After some research, Plastic Surgeons began placing the implants under the Pectoralis muscle in an attempt to prevent this "Capsular Contracture" from forming. This was somewhat successful and brought the contracture rate to approximately 30 percent. Better but not perfect. Then research was done changing the surface of the implant to what is called textured or rough. The idea was that the irregular surface would bond with the body's tissue better and break up the scar tissue and, thus, prevent contracture. Implants were developed with a covering of rough polyurethane. This worked well with contracture rates approaching 5 percent. Unfortunately this cover degraded over time and there were worries about it being toxic, so those implants were taken off the market. In an attempt to simulate this rough surface, silicone rubber was made "textured". At first it was thought these surfaces improved rates of scar formation but most studies find this claim to be controversial. Interestingly, rates of capsular contracture with smooth implants have improved over the years possibly because of improved manufacturing standards and maybe because most implants are placed beneath the Pectoralis Muscle. At this time most Plastic Surgeons feel there is minimal if any advantage to using textured silicone rubber surfaced implants when comparing results to smooth implants.

In the early 1990's a group of women that had undergone Breast Augmentation and Reconstruction began making claims that their Silicone Breast implants were causing diseases in their bodies. These were serious, progressive and non-curable auto-immune diseases such as Rheumatoid Arthritis, Lupus, and Chronic Fatigue Syndrome. Since the initial FDA's ban on their use in the early 1990's, silicone gel implants have been thoroughly investigated and there is conclusive evidence that they do not cause any medical diseases. On November 17, 2006, the FDA reinstated their approval for the use of silicone gel for routine Breast Augmentation. That does not mean that they are perfect by any means. The problem with silicone gel is that it is not absorbable by the body. So if it ruptures and the gel gets outside the scar tissue that normally encases the implant (this is very uncommon), there can be some serious inflammatory tissues that may require surgery to correct. The major advance in Gel technology has been the development of a new form of Gel called "Cohesive Gel," "MemoryGel™", Form-Stable or what the lay press calls "Gummy Bear" implants. The new gel sticks to itself and maintains its shape so it should not ooze out or migrate if the implant ruptures. However, you must always keep in mind that nothing in medicine or surgery is perfect. For example, if you vaccinate your children, as many as one in two hundred thousand can have a severe reaction and even die.

Canfield Vectra 3D (3-dimensional) breast imaging and preoperative planning: One of the greatest challenges facing patients and surgeons is gathering all of the critical information needed to make the best decisions regarding Breast Implantation. Surgeons employed body surface measurements, characteristics of the patient's breast tissue and incorporated the desires of the patient when coming to a decision. However, it was always difficult to explain to a patient what they actually would look like after surgery. There were always confusing discussions about whether 50 cc's of difference one way or another would make a visible difference. As you will read later, trying to predict a "Cup Size" proves to be unreliable if not impossible.

Some Surgeons employ a technique of having the patient try on bras containing different sized implants or bags of rice to get an idea of which implant to choose. I disagree with this exercise because, more often than not, it confuses patients. If that is true, why do some surgeons still employ this technique? Well, if you are not happy, the doctor can say "I just gave you what you wanted. You picked the implant size, not me." I have found that this gimmick can result in patients choosing an implant that is much too big for their size.

Fortunately we now have a new powerful tool in evaluating and educating patients for Breast Augmentation. Canfield Vectra 3D, which is capable of producing a true Photo-realistic 3-dimensional image of a patient. From this image, the included software can measure and analyze each patient's proportions, volumes and asymmetries with an accuracy never before obtainable. Differences in sizes and volumes from right to left breast can be approximated and compared. These can all be thoroughly shown to and discussed with the patient. What's more, the software is capable of simulating the effect of various sized implants and gives the most real likeness yet of a potential result. It can even compare the differences of volumes as little as 25 ccs so patients can get a much more realistic idea of what an implant may be capable of producing.

Although a powerful tool for evaluation, discussion and patient education, it must be kept in mind that this imaging technology is still a simulation and does not show a true result. Therefore it should be thought of as a great aid in helping me and you make decisions regarding Breast Augmentation. However, **this technology in no way should imply a warrantee or guarantee as to the eventual results of surgery.**

Silicone Gel versus Saline-filled Implants. Issues and Answers: For nearly 15 years, the only implant that was available for routine Breast Augmentation was Saline-filled. In 2006, Silicone Gel filled implants became available. I would like to discuss the pros and cons of each type of implant.

Saline-filled Implants: Saline implants are made of a silicone rubber shell and are inflated at the time of surgery to their appropriate size with saline (0.9% salt water). If they leak (rupture), the body just absorbs the water with little side effect other than the volume is lost (Some patients just wake up with a "flat tire"). This is one big advantage of Saline-filled implants. A second advantage is that they come deflated and, therefore, can be placed through a smaller incision. However, as you will see during your consultation, saline-filled implants do not feel anything like silicone gel or normal breast tissue. This is why we always place these implants under the Pectoralis Muscle. This is a sculpting technique to hide this implant under normal soft tissue. In this way, the implant is less visible and feels more natural. They are still not as natural feeling as silicone gel but they are acceptable in appearance and feel for patients with adequate soft tissue (breast and muscle tissue). Another interesting thing about saline-filled implants that I mentioned earlier is that the rate of Capsular Contracture (becoming hard) is about the same for textured and smooth implants. Since textured implants tend to be more visible and palpable (easily felt), patients find them less natural. Therefore, I have preferred smooth saline-filled implants since 1995 and have had a very low rate capsular contracture when placed underneath the muscle.

There are three standard options for placement of the incision and there are pros and cons to each. Placement through the belly button is a very controversial and gimmicky method that most Plastic Surgeons, including me, strongly advise patients against.

Trans-Axillary Incision: Placing the incision in the armpit may be considered advantageous because there is no incision on the chest. However, the most critical part of Breast Augmentation is the placement of the implant in the fold below the breast. Since this incision is the farthest from the fold, it is technically more difficult to place the implant precisely. This may result in mal-position of the implant. **Also, you must consider Breast Augmentation a maintenance operation.** For many reasons it may be necessary in the future for you to undergo additional surgery to improve or maintain the result. Although I have not seen these rates of re-operation in my practice, in recent data the re-operation rate for Breast Augmentation can be over 20 percent in ten years. The problem with axillary incisions is that most of the surgeries that need to be done cannot be done through this incision. Therefore, many of the women that have used this incision will need a second scar in the future. For these reasons, I don't prefer trans-axillary incisions.

Infra-mammary Incision: Under the breast fold is the traditional method most Plastic Surgeons were trained to do because it is straight-forward and it can be used with all implant types (Silicone Gel implants require an incision that is at least 2 inches long.) The potential disadvantage with infra-mammary incisions is that they may widen and become visible. Unless I am revising a patient from another practice who has this scar or am required to use it because of the need of a larger incision, I do not prefer to use this approach. However, if I am placing a Silicone Gel implant and the patient's areola is too small to accommodate a gel implant, I do not hesitate to use the infra-mammary incision and have found it to heal acceptably in nearly all patients.

Peri-areolar Incision: Most surgeons, including me, prefer an incision around the nipple if possible. This is called the peri-areolar approach. There are some misconceptions about this incision that deserve discussion. You might have heard that if you go through the nipple, you cannot breast feed in the future. This is not true. We never cut through the ducts that connect the nipple to the breast tissue and, therefore, patients should have no difficulty breast-feeding. Another thing you might hear is that it is more painful to go through the nipple. This is, again, not true. Most of the pain associated with Breast Augmentation is related to muscle spasm that results from making the pocket for the implant. Since you are going to make the same pocket regardless of the incision, the post-operative pain is the same for each incision. Lastly you might hear that going through the nipple causes the nipple to become numb. This is not true either. However, can you get nipple numbness from this operation? The answer is yes. But it has little to do with the incision. The nerves that go to the nipple are located near the pocket for the implant and commonly get stretched and bruised. If they get stretched or bruised enough, they can stop working. In the 15 to 20 percent of cases that have numbness after surgery, most will resolve and be normal at 12 months. However, any breast surgery can result in nipples being permanently numb. But this has nothing to do with the incision. It is, again, due to the pocket. There are three reasons that most surgeons perform this incision when possible. For one, it is technically easier to create the pocket precisely. Two, if you ever need another operation you can usually perform it through the same incision. However, the biggest reason why most surgeons use this incision is that for some reason, and no one knows why, this area heals with nearly an invisible scar in the majority of patients. So when it is possible to use the Peri-areolar incision, I prefer this method.

Silicone Gel Breast Implants: In 2006 the FDA concluded that Silicone Gel is safe for routine use (patients must be at least 22 years old, have no active infections, not pregnant, no active cancer). I assume that most Plastic Surgeons use them in the majority of patients. This is because Silicone Gel is far and away the most natural feeling and looking breast implant available. However, like everything in life, they are not perfect. The most noticeable disadvantage of Silicone Gel implants is that they require a larger incision for placement. For several years now I have used a special device for placing Silicone Gel implants, known as a Keller Funnel. It makes it possible to place Gel implants through a much smaller incision and helps prevent Capsular Contracture. Incisional size has become much less of a concern.

Because Gel implants feel so natural, in selected cases, some patients may elect to place them on top of the muscle. This results in less discomfort and faster recovery and the breasts don't move when you flex your chest muscles. However, in the vast majority of patients we still place them under the muscle. This makes the upper pole of the breast more natural, maintains a better blood supply to the breast and there may be an advantage for Capsular Contracture.

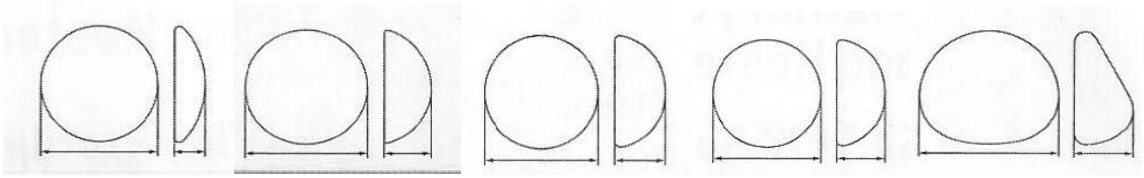
In contrast to Saline-filled implants, the maintenance of Gel can be more involved. The FDA and Manufacturers recommends routine follow-up with MRI scans (very costly) every 2 years to detect rupture. Although many Plastic Surgeons do not recommend surgery for uncomplicated/ non-symptomatic Silicone Gel ruptures, the Manufacturer strongly recommends removal with replacement. Another concern that came to light in 2006 but has not really been an issue is that some **Health Insurance Carriers may have issues with these implants and this may even cause you to lose or prevent your getting individual coverage.** My personal opinion is that with the FDA approval of these implants, Insurance Carriers will have real difficulty defending this prejudice and will stop this practice. To date, I have not heard of any patient having their health insurance affected by Breast Implants. However, pre-existing conditions like High Blood Pressure or Diabetes can also make it impossible for an individual to get covered. Group policies are almost never affected by these circumstances. Asking your Insurance carrier specifically is recommended.

Table 1: Type of Implant Comparison

Implant	Natural Look	Natural Feel	Visible Wrinkles	Incision	Pocket	Maintenance	Cost
Saline	Good	Okay	Possible	1 inch	Below Muscle	Possibly More involved	Less
Silicone Gel	Best	Best	Much Less	>1 inch	Below Preferred	Simpler	$
Ideal	Good	Better	Much Less	>1 inch	Below	Simpler	$$

Ideal Implant: Within the last year a new implant has become available in the United States. It's trade name is the "Ideal Implant" and was invented by a Plastic Surgeon from Dallas, Robert Hamas, MD. He developed a more form-stable Saline-Filled implant that feels more natural than traditional Saline Implants. When implanted it may feel in many respects similar to Silicone Gel. The technology employed set up internal baffles to prevent the free flow of saline, which makes it firmer. It is similar to a waveless water bed, for those of you who were alive in the '80s. I have known Dr. Hamas for over 20 years and he has a stellar reputation as a researcher and clinical Plastic Surgeon. He asked me to be one of the initial investigators during the 10 year study with this implant and I can say we have had an excellent experience with them. Patients have been very happy. The Ideal implant is designed for the patient that wants a better feel but wants to avoid Silicone Gel. In patients that have at least a B-cup worth of their own breast tissue, it gives a very nice result. These implants are more expensive but have a similar deflation rate as normal Saline. In selected patients, it can be the preferred implant.

Implant Projection and Shape:



Moderate **Moderate-Plus** **High** **Ultra-High** **Anatomical**

Just in case you thought making the decision was complicated enough, I need to touch upon the different shapes available for breast implants. The vast majority of Breast implants used are round in shape with different projections (thickness). Over the years different projections were developed to improve upon the natural breast and even enhance them beyond normal (fake breast look). Increasing the projection tends to give a fuller upper pole and the breast surface is further from the natural chest wall (ribs). Traditional breast enlargements were done with Moderate and Moderate-plus implants as they gave the most natural result. As patients requested a more obvious and artificial look, High and Ultra-High projections were developed. However, these implants can make patients look fake with a stark line of demarcation (visibility of implant) in the upper breast, develop more visible wrinkles (because they are thicker) and, because they are much larger, stress the tissues of the chest beyond its ability to maintain normal anatomy. High and Ultra-High Profile implants are designed to give much larger implant volumes to people with small chest wall dimensions. However, this comes with a physiologic cost, patients look more like they have a half of a coconut on their chest and their re-operation rates are much higher. For the vast majority of patients, the best choice remains the Moderate or Moderate-Plus round implant.

The final option that deserves mention is the development of "Anatomical" or tear-drop-shaped Breast Implant. They were first developed in the early 1990's as an option for breast reconstruction after mastectomy for cancer. In mastectomy patients, all of the tissue is gone and the goal in many cases is to look as good as possible in clothes. By using an anatomical implant, Reconstruction Surgeons can more closely replace lost tissue so it looks better in

clothing. However, the implants must be very textured so that they stick to the ribs and not spin. If they move after being placed, bazaar mis-shaping of the breast results. This actually happens sometimes. But if they work as designed, the breast is tightly stuck on the chest wall and doesn't move at all. Neither of these problems are good for a cosmetic procedure in a normal breast. In fact, Dr. Hamas (of Ideal Implant) did a study in the 1997's that showed that all smooth round implants are tear-drop shaped when patients were standing. But they also moved like normal breasts and did not have the problem of mis-shaping if they changed position. The original Anatomical Implants were Saline-filled and were developed by Dr. John Tebbetts, with whom I trained. He was a great Mentor. When I started practice in 1995, I was the Hot-Shot Plastic Surgeon using the newest, greatest techniques. I used many of the Anatomical Implants with enthusiasm until I had to re-operate on half of those patients for many problems including the issues discussed above. The Saline-filled version did not work out so well and was, for the most part, abandoned for Cosmetic Breast Augmentation.

After Silicone Gel implants were brought back on the market in 2006, anatomical versions were pushed aggressively by the implant manufacturers as being a more natural and better, high-tech alternative for smooth round Silicone Gel implants. They were all the rage in the market place for a few years but have become less popular because of the same old problems with non-movement of the breast and bazaar mis-shaping of the breast if they spin. I, personally, do not prefer to use them because our results with smooth-round Silicone Gel is so good in over 90+ percent of patients. In a few, very selected, patients who are willing to accept the short-comings of Anatomical implant they can be a good option to help lift the breast or produce a very fake look.

I know that having all of these choices can make it confusing when patients are trying to decide what is best for them. Prior to 2006 the decision was easy because there were almost no choices (Saline-filled only). Now there are issues of implant fill, shape, incision placement, cost, discomfort and significant differences in maintenance. For medico-legal reasons, the manufacturers and FDA would prefer that surgeons not support one type of implant. However, my staff reminds me that **patients come to the doctor to get an opinion** about what would be best for their specific situation. So at the risk of appearing prejudicial, I would like to give you my personal opinion about the debate over Silicone Gel versus Saline-filled implants. My guess is that if you consult with another Plastic Surgeon, you will possibly get a different opinion. After all, if you go to 2 doctors, you get 3 opinions!

In my opinion the best breast implant with regards to giving a soft, natural appearance and feel is the Smooth Round Silicone Gel, usually of Moderate-Plus projection. Saline implants fall well short in terms of natural feel in that Saline almost always feels different (fake) than normal breast tissue and can be much more artificial in appearance. That is why we try to hide Saline implants by placing them under the pectoralis muscle. Saline implants commonly develop visible wrinkles despite being under the muscle. Although some very thin patients develop visible wrinkles with Silicone Gel, they are always better than they would have been with Saline. "Ideal" implants don't have this issue to any great degree. However, the issues of cost, increased size of the incision and potential scar and the absolute need for dedicated follow-up are not to be taken lightly. You as the patient must weigh these factors for yourself.

There are two types of patients that deserve significant consideration. Patients who have thicker skin and at least a B+ amount of breast tissue with little sagginess will look and feel very natural with Saline-filled implants. They may not be quite as good as Silicone Gel, but those results are very good. In these patients, Ideal Implants are very close to Gel. To put up with the added expense and hassle of Silicone Gel may not be worth it. However, in those patients who are thin with less than B sized breasts, Silicone Gel offers a dramatic improvement over Saline and I would strongly recommend Gel for them.

In summary, if you are a person who wants the very best natural result possible and is willing to go the extra mile (cost and dedicated follow-up) to get it, Silicone Gel is your best choice. If, however, you are willing to compromise a bit on the result to save money, have fewer hassles or you like the more artificial result and feel, Saline is probably your best choice.

Breast augmentation is performed as an outpatient. In this practice it is performed under general anesthesia. Although some practices perform Breast Augmentation with sedation and local anesthesia, I believe that it is a much more pleasant experience and it can be done more precisely with you asleep. The risks of general anesthesia are greatly over-stated by some sources. In fact, most patients have a much larger risk of injury and death by getting into their car than from the sophisticated general anesthesia techniques now available. I do not use drains, or little tubes, to collect fluid that may occur around the implant. I know that some surgeons do, but I have found no advantage to

using them. However, I would not fault a surgeon for using them and I have, on occasion used them as well. If they are used, they generally are removed 24 hours later.

We always see you the following day after surgery. We will see you again in 7 to 10 days to remove sutures and again at 8 weeks after surgery to make sure the implants are settling well into their pockets and everything is progressing normally. I like to see you yearly to check and see how you are doing.

Most patients take 4 to 7 days off of work. I only have two major rules after Breast Augmentation. No push-up or under-wire bras until the implants have settled (about 6 weeks) and **if it hurts, don't do it**. Most patients can only lift 10 to 15 pounds for the first two weeks. Mild exercise can usually be started in two weeks but upper body work outs should be put off for four to six weeks.

It takes about 6 weeks before we can draw any conclusions about the result so don't stress out. However, areas of the body that have undergone surgery actually change and mature for up to 2 years. The changes from six weeks to a year are very subtle and occur slowly. We will discuss your result in detail at your 2-month follow-up visit.

Other factors important when considering Breast Augmentation include whether or not you have finished having children and how recently you breastfed your children. Pregnancy and breast-feeding have major hormonal, physiologic and anatomic impacts on the breast that may be very important to the outcome of your surgery. It may require more surgery to improve or maintain the result after having children. It may be wise to wait until after you have had your children before having breast augmentation. Because of the risk of infection, you should not breast feed within 6 months of having your surgery. Also, becoming pregnant immediately after your surgery may compromise your result due the large hormonal stimulation to the breast with pregnancy. If you have questions about these factors, please bring them up at the time of your consultation.

There are two other concepts that are very important for you to understand. First is the concept of **cup size**. Determining cup size is an unreliable way to compare and measure an individual's breast for many reasons. First, few people understand how to measure and what is really meant by cup size. Few women wear the right size bra and all bra manufacturers make them to different standards. Cup sizes vary between companies. In contrast, each patient has a unique anatomy that will dictate what size implant is best for them and how they will look after surgery. As the implants get larger, their base diameter becomes bigger and they can sit too close to each other. This looks ridiculous. Also, most patients only have so much skin and it cannot stretch to infinity. Implants that are too big for a given individual may increase the risk of serious complications and require many operations to correct the problems. Because of these factors and the fact that cup sizing is so confusing**, there is no guarantee for post-operative cup size on any specific patient.** However, I always ask what the patient desires to figure out what they are thinking. Patients that come in desiring to be a C usually want a D but are afraid to say that thinking that a D is too big. What that means to me is that they want to be proportional to their body size and look good in their clothes and bathing suits. They just don't want to be the object of cliché jokes or have their significant others get in fights over them. Women who come in saying they want to be a D usually want to be much bigger; usually as big as I can reasonably go. Sometimes patients come in with pictures from magazines and say, "I want to look just like this." The reality is that we don't usually have that much control with Breast Augmentation. **Your individual anatomy will dictate your final result.** I sometimes joke with my patients that this is not a Burger King operation. You cannot "have it your way." If you started out resembling "Miss July", it is likely you will have a similar result. But otherwise, it is unrealistic to assume that any patient would look exactly like "Miss July" after surgery.

The other concept that you must be comfortable with and accept is that Breast Augmentation, by its nature, is a **"Maintenance Operation"**. By having Breast Augmentation you are making the choice to enhance your appearance by enlarging your breasts. However, it is unlikely that the results of this one operation or the implant will last your lifetime. In most patients it lasts years, but there are multiple reasons that a patient may need additional surgeries. Most of these will be covered below. The fact is that the majority of patients will undergo further surgery to maintain or improve upon their result. **Future surgery, whether for revisions or complications, will almost always result in additional costs to you and may include anesthesia, facility, implant (if necessary) and surgeon's fees.** It is impossible to predict the kind of surgery or the costs that would be required in the future. One example of additional surgery would be Mastopexy. Mastopexy, or a breast lift, may be necessary at the time of the initial Breast Augmentation or may become necessary as a woman ages or has children. As the skin of the breast

ages, it can stretch and cause the nipple to become too low on the chest. Mastopexy is designed to reposition the nipple and breast tissue back into a pleasing position and remove any extra skin. These procedures may result in permanent and visible scars. Breast Lifts are not commonly needed in patients that have had a standard Breast Augmentation, but it is possible. Also some women decide later in life to have the implants removed. Those who do may develop cosmetically unacceptable dimpling and/or puckering of the breast following removal of the implant or require additional surgery to improve the breasts shape.

ACCEPTED RISKS AND COMPLICATIONS:

Although all routine cosmetic surgical procedures have low complication rates, it is always important that you understand the standard potential risks and complications so you can make an informed decision as to whether or not to proceed with surgery. I joke with my patients and tell them that I have to scare them before I operate on them. The reality is, however, that even if the risk is one in a 100,000, if it happens to you it is 100 percent for you. Below is a list of the commonly accepted risks and known complications of Breast Augmentation. Although this is a long list and may give you pause, it is by no means complete. Some reported complications are exceedingly rare and this list would be pages and pages if all of them were included. The following are the accepted risks and complications that Plastic Surgeons may expect to potentially occur after Breast Augmentation.

ACCEPTED RISKS AND COMPLICATIONS OF BREAST AUGMENTATION:

BLEEDING: Bleeding is a potential risk of any operation. The chance of needing a blood transfusion from breast augmentation is extremely small. If a collection of blood occurs around the implant or under the skin, it is called a hematoma. If you get a significant hematoma, you need to go back to the Operating Room to have it removed. You cannot heal properly with a significant hematoma. In over 18 years and over 2500 Breast Augmentations, the incidence of significant hematoma is approximately one percent.

INFECTION: Infection is a potential complication of any operation but can be especially serious in breast augmentation. Although every effort is made to prevent any infectious complications including use of intravenous antibiotics, placing the implant in antibiotics, placing antibiotics inside the pocket and giving postoperative antibiotics by mouth, infections can still occur. If the implant pocket gets infected, the implant must be removed and must stay out of the body for at least 3 to 6 months. This is a potentially disastrous complication. Since 1995, we have had less than 5 major infections that required implant removal.

RUPTURE/DEFLATION: Breast implants are products and it is very unlikely that they will last your lifetime. Although there are some patients who have had the same implants for 30 years without problems, it is doubtful that any surgical implant will last forever. If a saline implant ruptures, it contains salt water (saline) which is easily absorbed by the body with no consequence. Most patients describe not feeling anything, but rather waking up in the morning with a “flat tire." In the case of Silicone Gel, there may be no symptoms at all or the breast may become tender and firm. The warranties regarding these implants change from time to time and will be specifically discussed at the time of your consultation. The implants are always guaranteed against breakage by the manufacturer for life, but the amount the implant company will pay for the replacement surgery will vary. After 10 years, there is a life-time warranty on the implant, but any surgical fees would be your responsibility.

WOUND HEALING COMPLICATIONS:

There are many factors that are crucial to normal post-operative wound healing. These include but are not limited to nutrition, hygiene, age, medical diseases, tobacco use and the unique genetic make up of each person. Some of these factors we can control and others we cannot. Our responsibility (the patient’s and the doctor’s) is to be committed to optimizing these factors as much as possible before surgery so as to minimize the chances of post-operative metabolic and wound complications.

If these factors are too great, Dr. Hause will probably determine that you are a poor surgical risk and not a candidate for surgery. Although it may be stating the obvious, wound healing is a very complex and miraculous process that depends on the normal functioning of many steps. When these mechanisms are not normal, it can result in delayed healing, wound breakdown with tissue necrosis (tissue death and very prolonged healing), localized or invasive infection, severe scarring and deformity, prolonged hospitalization and rarely permanent disability or death. Dr. Hause’s task is to reasonably identify and gauge each of these factors and make a medical determination of the

relative risks to you as a patient. As the patient, your responsibility is to be as honest as possible when reporting medical conditions, use of medications, drugs and tobacco, and habits of nutrition and hygiene. Failure to adhere to reasonable standards can put patients at much greater risk of wound and metabolic complications. However, even healthy patients whose controllable factors are optimal can suffer wound and healing complications.

Nutrition: Good nutrition is a prerequisite to good health and especially to healing. Extremes of poor nutrition, whether a person is too thin or obese can have a major impact on healing. Patients who have lost a large amount of weight or those who are on an aggressive weight loss diet are particularly prone to malnutrition and resultant poor healing. Obese patients are also a risk for wound complications due to the decreased relative blood supply in fatty areas. Obese patients also are at higher risk for Respiratory, Cardiac, bleeding, blood clotting and anesthesia complications.

Hygiene: Although it may be stating the obvious, the cleaner you are, the faster and better you heal. Poor hygiene results in more inflammation, possible infection and delayed healing.

Age: The older a patient is, the less robust is the response to surgery and healing. Interesting, this same decrease in healing may result in less conspicuous scars.

Medical Diseases: (steroids) and Diabetes: Any chronic medical disease may adversely impact wound healing. Diabetes is well known to prolong the healing process and have higher risks of wound healing and infection. Those diabetics who are not in tight control with relatively normal blood glucose level are at markedly increased risks and will usually not be candidates for elective cosmetic surgery. Patients with lupus or other illnesses that require steroids for treatment may be at greatly increased risks for surgery and healing.

Tobacco Use: A recent study reported that the three most important controllable factors that can increase a person's lifespan is to exercise 30 minutes a day, wear their seat belt in a car, and not smoke. By far the most important of those is not smoking. Besides the known chronic health risks of smoking, tobacco smoke does several things that specifically impair healing. First, nicotine causes blood vessels to constrict which results in less blood going to healing tissues. Second, cigarette smoke has high concentrations of Carbon Monoxide, a serious blood poison. Carbon Monoxide binds to the hemoglobin in red blood cells and prevents it from carrying oxygen. So in essence, smoking causes less blood to be delivered to the very metabolically demanding healing tissue and once that smaller amount of blood arrives, it has greatly decreased oxygen to power the healing process. Some patients ask me if decreasing the number of cigarettes makes a big difference. Since the effect of one cigarette lasts over 6 hours, the obvious answer is no. Patients must stop all smoking for at least 3 days prior to surgery and for at least 3 weeks afterwards. Smokers are still at risk for the chronic effects of smoking, but actively smoking immediately before and after surgery is doubly bad.

Genetics: Much of the healing potential for a specific patient is genetically determined. Genetic predisposition controls whether or not a person develops keloid or hypertrophic scars, may have prolonged bruising or other healing abnormalities. There are some rare genetic diseases such as Ehlers- Danlos syndrome, Marfan's syndrome and others that may impair post-operative healing. If you are known to have any genetic illnesses, it is critical that you inform Dr. Hause during your consultation.

SENSORY CHANGES: It is inevitable with any operative site that **sensation in that area will change.** Whether the surgery is an appendectomy, hernia or a breast augmentation, the area of surgery will change in the way it feels. Any patient may experience numbness, tingling, burning sensation, twingy or shooting pains. Most of these sensation changes will be short-lived and resolve on their own, but they can be permanent. Thankfully, these sensations are rarely permanent.

SCARRING: Although every effort will be made to make the incisions and resulting scars as minimal as possible, visible scars are possible with any operation. Despite taking every precaution, any patient with breast implants can develop significant scar formation, capsular contracture, hardness of the implant and even chronic pain. In over 18 years I have, thankfully, had only a handful of patients that required repeat surgery for this challenging problem.

BREAST ASYMMETRY, IMPLANT MALPOSITION: It is common for women to have one breast that is larger or in a different position from side to side. This is actually the norm and not the exception. Every effort will be made to minimize this asymmetry, but there will probably be asymmetries left after the surgery. Occasionally implants do not settle in the pocket properly and there can be some asymmetry in their Position. Occasionally reoperation is required to place an implant in a more natural position. In my patients, this has been a very rare problem and it has been over 10 years since someone required corrective surgery after simple breast augmentation.

BREAST INDENTATION AND DEFORMITY WITH ANIMATION: If the breast implant is located underneath the pectoralis major muscle, when that muscle is flexed with upper body workouts or exercises, the implant will be flattened and move laterally. This is inevitable because of the location of the implant. This is very uncommon with implants located above the muscle.

BREAST CANCER: In our country the instance of breast cancer is one in seven women during their life-time. This is an unfortunate fact. The problem with breast implants is that x-rays do not go through them and therefore mammograms are not as good as without breast implants. If a patient has a mammogram without a breast implant in place, only 90% of the breast tissue is seen. In women who have had breast implantation approximately 40% to 50% of the breast tissue is seen; however, what is interesting is that women who have breast implants who do get breast cancer have a slightly higher cure rate than the general population. Why is this? In general because women with breast implants tend to check their breasts and pick things up earlier. The earlier the cancer is detected the more likely it is curable. Also when a patient has a breast implant on their chest wall and the breast tissue is draped over the front of it, it is easier to do a breast exam and detect a smaller lesion. Also, one recent study suggested a slight decrease in cancer rates with patients with implants. The reason for this is unknown.

PALPABILITY OR VISIBILITY OF THE IMPLANT: All implants wrinkle within the body, although in most cases these wrinkles are not visible through the skin. However, occasionally these wrinkles are visible and many times can be felt through the skin. This is one of the limitations of saline breast augmentation and is actually one indication for converting to Silicone gel. However, this can occur with Silicone Gel implants as well.

LIFE-THREATENING AND FATAL COMPLICATIONS : With any operation or anesthetic there rarely can be severe complications such as collapsed lungs, heart attacks, blood clots with pulmonary embolism, shock and even death. These complications are exceptionally rare. “Knock on Wood”, none of my patients have ever required hospitalization or died from any of these types of catastrophic complications.

STANDARD ANESTHETIC RISKS: The administration of any medication has some amount of risk. Although every effort is made to minimize these risks, adverse reactions and side effects can not always be foreseen or prevented. Complications of anesthesia can be as mild as slight dizziness or nausea to more profound abnormalities. Although rare, hospitalization may be necessary to control and/or treat any potential complication. Any patient undergoing general anesthetic has a 1 in 200,000 chance of catastrophe and death. However this risk is small enough to say that it is safer to have general anesthetic than get into an automobile. It is not risk free, but severe complications are rare.

CALCIUM DEPOSITS: The longer implants are in the body, the more likely it is to have calcium deposits in the scar tissue surrounding the implant. It is possible these calcium deposits can make the breast firm, but they can also further impair mammograms. This does not occur in all patients.