Breast Enhancement Surgery

...Understanding the Options

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Contents

Introduction

A woman may want to enhance the appearance of her breasts for a number of reasons. Her breasts may not be as large or shapely as she desires. She may have had children and her breasts changed. This booklet was created to help a woman who is considering cosmetic surgery of her breasts understand some of the options available. I want her to be able to make choices based on *knowledge* rather than just choosing a procedure because a friend or family member chose that procedure.

It's important to remember that each woman develops differently. Age, pregnancy, breast feeding, weight gain or weight loss, skin tone, and overall health affect breasts tremendously. A 45 year-old woman who has breast-fed three children and is moderately overweight has breasts that are very different than a 22 year-old who has never been pregnant and is near her ideal body weight. The final appearance of the breasts of these two women may be quite different even if they undergo similar procedures.

A woman's right breast may look different than her left breast. Having one breast that is larger than the other is common. Sometimes one nipple is a little higher than the other. One areola (the colored area around the nipple) may be larger than the other. Depending on what a woman wants, any number of these differences may be addressed at the time of surgery. It is important to identify asymmetries that exist so that discussions may take place about how they might be treated.

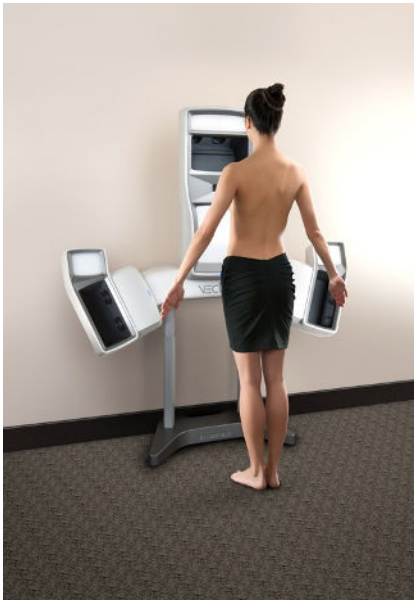
Most women want to know what size bra they are likely to wear after undergoing cosmetic breast surgery. Breast implants do not come in 'B' cup, 'C' cup, or 'D' cup sizes. Instead, they are measured in cc's. A cubic centimeter, or cc, is a unit of volume. An easy-to-understand example of cc's: a can of soda. A 12 ounce can of Diet Coke typically contains 355 cc's of fluid. Common volumes for implants used in breast enhancement surgery range from 270 cc's to 450 cc's. Occasionally larger or smaller sizes may be used. A woman who is tall, thin, young, never been pregnant, and has A cup breasts will end up with a different result after undergoing breast augmentation with 300 cc implants than a woman who is shorter, a bit overweight, older, has three children, and B or C cup breasts. To help arrive at the ideal size breast, it is important to discuss your desires and to weigh those desires against the benefits and risks of the different sizes and styles of implants available.

Breast implants are not used in every situation. A woman with moderately large but somewhat droopy breasts may like her overall fullness and how she looks in a bra but wants a more youthful, lifted appearance when she is not wearing a bra. In a case like that a breast lift (mastopexy) alone may provide the look she wants. There are different types of lifts available, depending on the specific physical attributes and goals, and these are described and illustrated on pages 10 through 13.

Rather than being a complete guide, this booklet is intended to help you understand some of the more important issues involved in breast enhancement surgery. It provides information about options and demonstrates these by showing 'before and after' photographs of women who have undergone those procedures by me. These photographs should not be understood to be the exact results you will have but rather are provided to help in the overall educational process.

The consultation: what are your goals?

Most women have a pretty good idea of how they want their breasts to look. Maybe a little more fullness at the top, more overall shape and volume, maybe not quite so droopy for instance. While they know what they want, they're not quite sure how to get there. That's where a visit with me comes in. Sometimes breast implants alone will be the best option. Sometimes implants aren't needed at all; a lift alone will work. About 1/3 of the time implants plus a breast lift are needed.



We use the Vectra XT three-dimensional imaging system to help during the consultation. Six cameras take photographs and the software program combines these into one 3-d image. This image can be rotated in all directions. The software contains information about every breast implant available for use in the U.S. A few clicks of the mouse allows us to see what the woman might look like with specific breast implants. The software also allows a woman to see how she might look with different types of breast lifts. It is a powerful system.

Each exam room has a full length mirror. I often have a woman stand in front of the mirror during our discussion. Sometimes I'll even draw on her while she is in front of the mirror. This helps me make sure that I am addressing the things that are most important to that particular person. Women come into the office often having watched videos on the internet, but those videos are of different people who have different physical attributes and different expectations. I want to do everything I can to help a particular woman understand how the different options are likely to affect her specifically.

Breast augmentation with implants

Most women who want more shape and fullness will require breast implants. There are a lot of options to consider and things to think about. The following several pages discuss some of them.

Breast implant profiles

The *profile* of a breast implant refers to the relationship between width, height, and projection (front-to-back dimension) for a given volume of saline or silicone. Look at these Mentor breast implants . They are all filled with the same volume, but have different 'shapes'. The implant at the top is a *moderate* profile implant. The middle is a *moderate-plus* profile, and the bottom implant is a *high* profile implant. The bottom implant is narrower and has more front-to-back dimension than the top.

Which profile implant will create the best result is a matter that I discuss with each of my patients. It depends on the combination of the woman's desires and her physical attributes.

Breast implant options: saline or silicone?

Four companies make breast implants that are approved by the Food and Drug Administration (FDA) for use in the United States: Mentor, Allergan Natrelle, Sientra, and Ideal Implant. Breast implants are silicone rubber shells filled with either saline (salt water) or silicone gel. Each of the companies has its own manufacturing processes. The specific composition of the silicone rubber shell varies from company to company. Similarly, the formulation of silicone used in silicone gel implants differs with each company. Saline implants, on the other hand, are all filled with the same sterile medical saline once the implants are placed in the patient. Saline does not vary from company to company.

A woman should have the opportunity to look at and hold different implants before she decides which implants to use. Two companies, Mentor and Natrelle, make both silicone gel implants and saline implants. Sientra only makes silicone gel implants, and Ideal Implant only makes saline implants. The saline implants from Mentor and Natrelle look and feel similar to each other, with relatively minor differences. Ideal Implant saline implants have a different look and feel. It's worth comparing the different implants.

The smooth surface silicone implants from the different companies have, in my opinion, small differences in how they look and feel. The thickness ("cohesivity") of the silicone in the implants may be very thick or moderately thick. There are different reasons to use different thicknesses of silicone gel. There's just no way to tell from watching videos or looking at before-and-after photographs online which implants may work best for a particular woman. That's why visiting with a plastic surgeon is so important. My office staff and I go over all of this with each prospective patient.

When deciding between saline and silicone implants, here are some things to consider:

Advantages of *saline* implants compared to silicone gel:

- Less expensive (Mentor and Allergan; Ideal Implant is about as expensive as silicone gel implants)
- Saline is the fluid that is typically administered in an i.v. for a hospitalized patient. There is no controversy regarding the safety of saline.
- Less risk of capsular contracture (hardening of internal scar tissue) than silicone gel implants
- Mammograms may be easier to interpret than with silicone gel implants

Disadvantages of saline implants compared to silicone gel:

- A leak leads to deflation and complete loss of volume and shape. This is noticeable and is socially inconvenient.
- Ripples are more noticeable than with silicone gel implants. Ripples feel more "crinkly" than ripples of silicone gel implants.
- Saline-filled implants may not provide as much upper breast fullness as similar volume silicone gel implants.

Advantages of *silicone gel* implants compared to saline implants:

- Ripples are less noticeable than with saline implants
- Better fullness in the upper parts of the breasts.
- Leakage may not result in any visible changes in the breast.

Disadvantages of silicone gel implants compared to saline implants:

- More expensive
- Capsular contracture may be more common than with saline implants.
- Controversy remains about silicone causing or contributing to autoimmune disorders and connective tissue diseases.
- Mammograms may be more difficult to interpret than with saline implants.
- Leak/rupture of the implant may not cause visible changes in the breast and may be harder to detect.

Breast implant options: surface and shape

The surface: smooth or textured

The outer shell of a breast implant is made from a silicone rubber polymer. The shell surface may be *smooth* or it may be coated with a soft granular material. An implant with the soft granular surface is called a *textured* implant. The image to the left shows a textured surface implant (left) and a smooth surface implant (right). Texturing stimulates the surrounding tissues to become attached to the surface of the implant. This process, the attaching of tissues to the implant, may help minimize the risk of hardening of scar tissue around the implant ("capsular contracture"). With early silicone breast implants in the 1970's, capsular contracture was common. Adding texture to the surface helped significantly decrease the risk of this problem with those early implants. The outer shells of breast implants have changed substantially since the 1970's. Changes in implant shell design have improved breast implants in many ways, perhaps one of the more significant improvements being that capsular contracture is much less common today. Texturing may still help minimize the risk of capsular contracture to some degree, but the effect may be fairly minimal. Most breast implants used for cosmetic and reconstructive breast surgery today have smooth surfaces.

The shape: round or "teardrop"

The image to the left shows a round implant (top) and a shaped implant (below). Round implants are the most commonly used implants in the United States. Saline and silicone implants are both available in both of these styles.

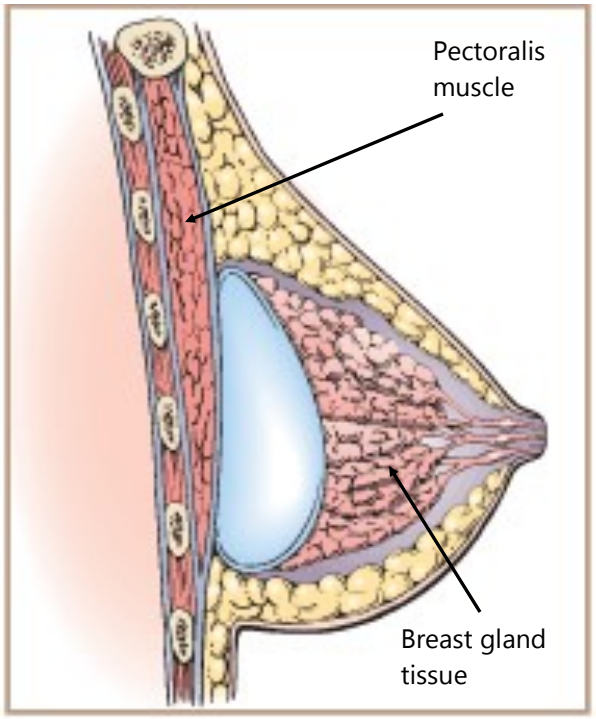
The original idea of using shaped ("teardrop") implants was that the final shape of the breasts would have more of a teardrop shape than someone with round implants, a more "natural" look. However, several studies have found that there is little difference in the final outcome whether round or shaped implants are used. This is important because one of the risks of using shaped implants is that they may rotate. If a round implant rotates, the breast looks the same as it did. If a shaped implant rotates, the thicker bottom area may now be located toward the side, resulting in fullness out toward the side of the breast.

Breast augmentation: In front of the muscle or behind?

Before an implant may be inserted, a "pocket" must be made for it. The location of this pocket is typically referred to as "above the muscle" (also referred to as "prepectoral") or "below the muscle" (also known as "retropectoral"). This describes the location of the implant in relation to the pectoralis major muscle. The pectoralis major is located immediately behind the breast tissue. It is common to place implants partially "below" the pectoralis major muscle. When implants are placed behind the muscle, the pectoralis muscle does not cover the implants *entirely* but rather the *upper and inner* parts of the implants. Sometimes implants are placed "above" the pectoralis major muscle. This is discussed in some detail during the initial office visit.

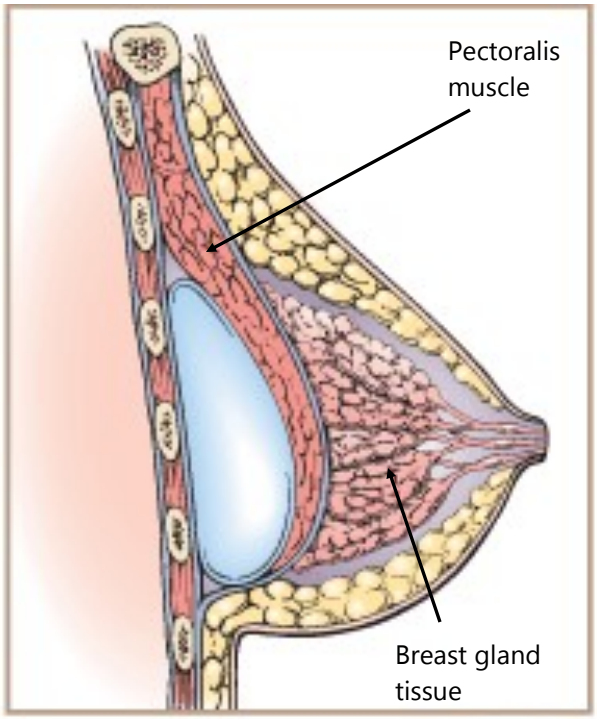
All breast implants have some wrinkles/ripples. Obviously no woman wants to be able to see ripples in her breasts from her breast implants. Placing the upper part of a breast implant behind the pectoralis major muscle adds an additional layer of covering (the muscle) in this area of the breast. Having this extra layer of tissue helps to minimize the risk of being able to see ripples in the upper and inner parts of the breasts.

The diagrams below show breasts, viewed from the side. In the diagram on the right the grayish breast implant is located below/behind the pectoralis major muscle. In the diagram on the left the grayish breast implant is directly behind the glandular breast tissue, in front of the pectoralis muscle.



Subglandular

(implant on top of the muscle)

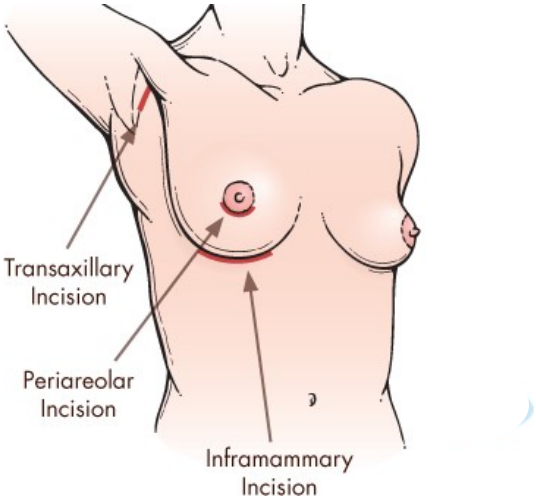


Subpectoral

(implant behind the muscle)

When implants are placed behind the pectoralis muscles there is a potential for distortion in the appearance of the breasts when the pectoralis muscles are contracted. Activities that cause the pectoralis muscles to contract, such as a woman pressing her hands together in front of her, may cause an irregular appearance in the breasts. It is rare for women who have undergone breast augmentation to complain about this or even bring it up in discussions after surgery. However, women who compete in body-building contests may want to consider having implants placed on top of the pectoralis muscles.

Breast augmentation: Incision site options



Another issue to consider is the location of the surgical incisions. Commonly used locations are shown in the image on the right. These include: the armpit ("transaxillary" approach), the bottom of the breast near where the breast meets the chest ("inframammary"), and the lower border of the areola (periareolar). Another site used by some surgeons is the area immediately above the belly button (umbilicus). This is referred to as a "transumbilical" breast augmentation, or 'TUBA'. I do not use the TUBA approach for breast augmentation.

What is the best incision site? That really depends on what a woman wants and how she perceives the relative advantages and disadvantages of each site. For a woman wearing a bathing suit or a strapless top, the armpit scar is going to be more visible than a scar below the breast or along the lower border of the areola. In an intimate setting, on the other hand, a scar along the inferior border of the areola or a scar below the breast may be more noticeable than a scar in the armpit.

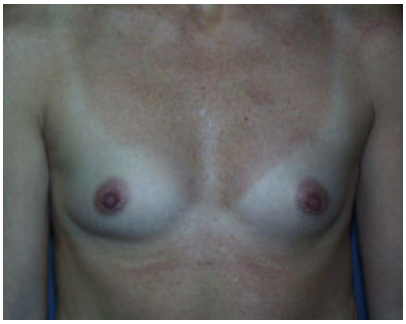
Another thing to consider: what happens if there's a problem with a breast implant? Suppose there's a problem like hardening around an implant (capsular contracture), infection, or an implant ruptures. Problems like these may be more difficult to repair from the umbilical and axillary approaches than the inframammary or peri-areolar sites. If an umbilical or axillary incision was used initially, it may become necessary to change to an inframammary incision to correct a problem related to the original surgery.

A study published in 2013 (Namnoun, et al, Atlanta) looked at rates of capsular contracture and malposition (implants that ended up too low, too high, or too far apart) as related to the original incision used for women undergoing breast augmentation for the first time. The TUBA approach was not evaluated. The study concluded that women whose implants had been placed through the inframammary (crease) incision had lower rates of capsular contracture and malposition than women whose implants were placed through an axillary or peri-areolar approach. The need for women to undergo additional corrective surgery for these problems was much higher for those who had implants placed through an axillary or peri-areolar incision than an incision below the breast. The same conclusions were also reached in a separate study (Spear, et al) published in 2012.

To summarize, a woman has choices when it comes to which incision to use. The different surgical approaches leave scars, typically 2 - 3 inches long, that may be more or less visible in different social settings. Revisions may be easier through an inframammary crease incision than an axillary or periareolar incision. There are published studies indicating a higher rate of complications when surgery is performed through the axillary or periareolar approaches than the inframammary approach. Each woman undergoing breast augmentation surgery should consider all of this when deciding which approach may work best for her.

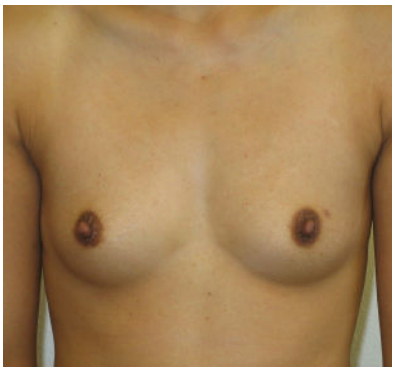
A woman undergoing mastopexies at the same time as breast augmentation may have her implants placed through the incisions being used for the mastopexies.

Breast augmentation: Patient photographs

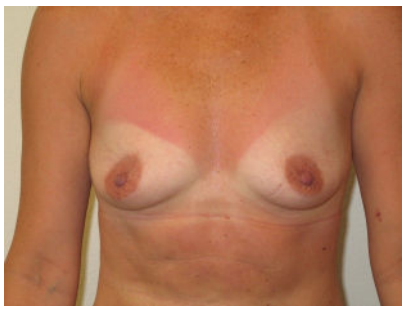



This 40 year-old woman underwent a breast augmentation with 330 cc round saline implants.


This 30 year-old mother of two underwent an augmentation with round 397 cc round silicone gel breast implants. She is 5 feet 7 inches tall and weighs 125 pounds. She wore a 34A bra before surgery and a 34D bra after her augmentation.




Before and after views of a 34 year-old woman who underwent breast augmentation with 375 cc saline-filled implants. She is 5 feet 6 inches tall, weighs 115 pounds, and has one child. She wore a 34A bra before surgery and 36C after.

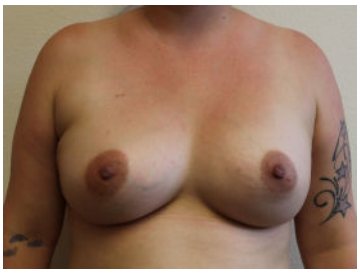



A 39 year-old mother of two, 5 feet 3 inches tall and weighing 115 pounds, underwent breast augmentation with round 275 cc silicone gel implants. She wore a 34A bra before surgery and 34C after her augmentation.

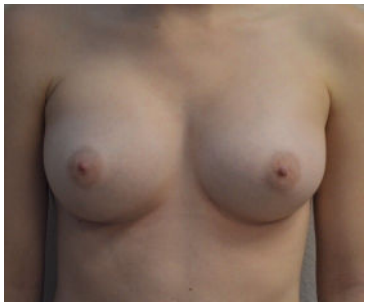
*Photographs are provided to help in the understanding of cosmetic breast surgery. The photographs do not imply or guarantee a particular outcome. Results will vary from person to person.

Breast augmentation: more examples


A 29 year-old 5 feet 7 inches tall, 130 pound woman who underwent an augmentation with 360 cc round saline breast implants. She wore a 34B bra before surgery and a 34D after.

This 28 year-old mother of 3 is 5 feet 6 inches tall and weighs 180 pounds. She underwent breast augmentation with 575 cc round saline breast implants. She wore a 38B bra before surgery and 38D after.

This 25 year-old woman is 5 feet 7 inches tall and weighs 137 pounds. She underwent an augmentation with round saline implants, 420 cc's on the right side and 390 cc's on the left. She wore a 34A bra before surgery and a 34D after.


A 35 year old woman who is 5 feet 4 inches tall, weighs 110 pounds and underwent breast augmentation with round saline implants and reduction of her nipples. She wore a 34B bra before surgery and a 34D after. The 'after' photograph was taken 4 years after her surgery.

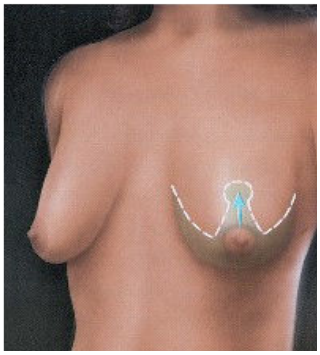

This 29 year-old woman has two children. She is 4 feet 11 inches tall and weighs 140 pounds. She underwent an augmentation with round saline implants, 420 cc's on the right and 390 cc's on the left. She wore a 34A bra before surgery and a 34D after.

Breast lift: mastopexy

Gravity pulls on breast tissue over the years, often resulting in a "droopy" or "ptotic" appearance. The breasts enlarge during pregnancy and while breast-feeding, but they lose much of that volume later. This cycle of gaining and losing volume creates stretched skin that loses its tone and may result in a sagging appearance. This kind of look may also occur in younger women who have never been pregnant, as well as in women who have lost a lot of weight. Some women seeking enhancement in the appearance of their breasts want to alter this ptotic look. They may want to elevate the nipple, and often they want increased volume in the upper part of the breasts. A breast implant alone will not elevate the nipple on the chest. To elevate the nipple, a breast lift, or mastopexy, is required.

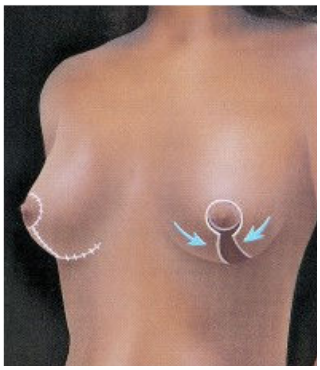
The drawings on this page are representative of a "traditional", or inverted-T pattern, mastopexy. Other types of mastopexies are also available. Photographs of these other types of breast lift are shown on pages 11 and 12.

This diagram depicts a woman who has low nipples and the breasts look "long". She is someone who would probably need to consider a breast lift to achieve her best look.

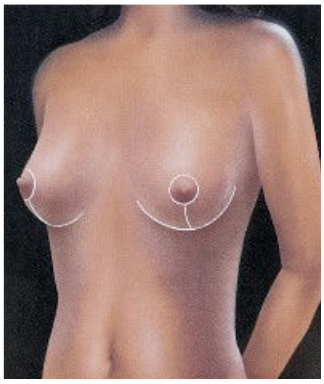


In a mastopexy the nipples remain attached to the underlying breast tissue. Some skin is removed and the nipples are then elevated to a position where they are more centered on the breasts.

The drawing to the left illustrates an inverted-T pattern mastopexy (also known as an "anchor" lift). The dotted white lines indicate where incisions are made. The blue arrow demonstrates that the nipple is moved up to a new elevated position. Other types of mastopexies exist, including vertical ("lollipop") and periareolar ("doughnut") patterns. Photographs of actual patients who have undergone the different types of breast lifts are found on the following pages. While scars are very pink initially, they scars fade over several months.



After removing some of the skin and elevating the nipples, the remaining tissues are brought together and the skin is sutured closed.



The white lines in this diagram indicate the scars that result from this type of breast lift.

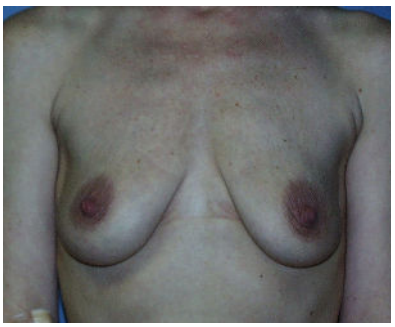
A mastopexy alone will not result in fullness in the upper part of the breast. The procedure will lift the nipple and tighten the breast. To achieve fullness in the upper part of the breast it may be necessary to either place an implant or do fat grafting.

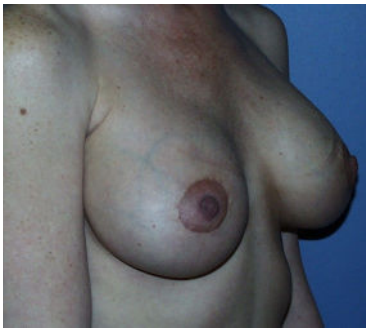
Periareolar mastopexy and augmentation

A periareolar mastopexy limits the scars to just around the areolas. If a woman undergoes breast augmentation at the same time, the implants may be placed through incisions in the breast creases. This type of breast lift works well for a woman whose nipples are just a little low and who does not have a lot of loose, sagging skin. This is the least common type of lift I do; most women have more loose skin than this procedure addresses.


The nipples of this 30 year-old woman were located near the bottom of her breasts. She underwent a periareolar mastopexy and breast augmentation with 339 cc round silicone gel implants. She wore a 32B bra before surgery and a 32D bra after. Her result is shown 6 months after the procedure.


This 44 year-old mother of 3 underwent a periareolar mastopexy and augmentation with 360 cc round saline implants. She wore a 34B bra before surgery and a 34D bra after surgery. The result is shown after 1 year.

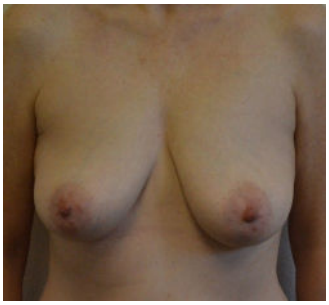


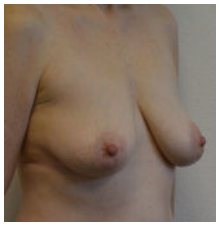



This 44 year-old woman has loose breast tissue with bottom-heavy appearing breasts. She underwent an augmentation with 360 cc round saline implants beneath the muscle and a periareolar mastopexy.

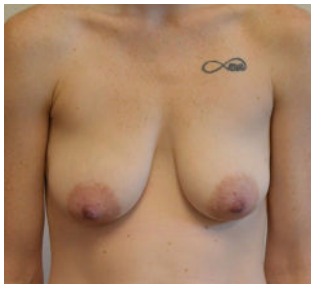
Vertical-pattern mastopexy and augmentation

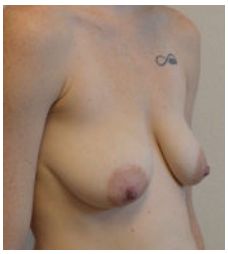
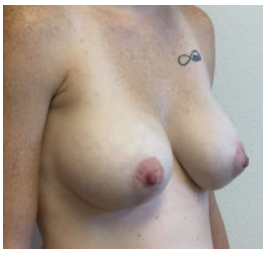
A vertical pattern ("lollipop") breast lift may work well for a woman whose nipples are a bit low and who has a bottom-heavy appearance of her breasts. The scars go around the areolas and down the central lower areas of the breasts. There are no scars in the breast creases.



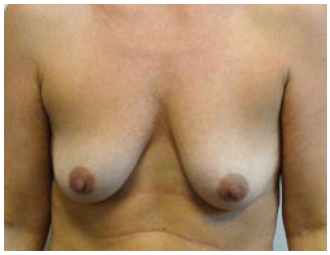
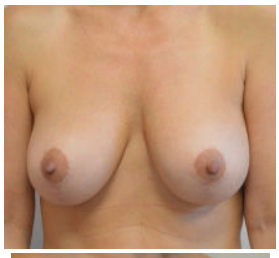
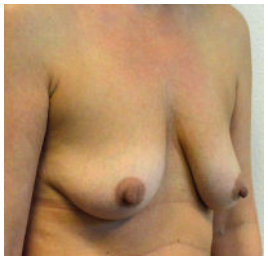



This 55 year-old woman is 5 feet tall and weighs 117 pounds. She underwent a vertical pattern mastopexy and augmentation with 300 cc silicone gel breast implants. She wore a 34C bra before surgery and a 32G after. Her result is shown ***4 years*** after her surgery, when she returned to undergo a tummy tuck.



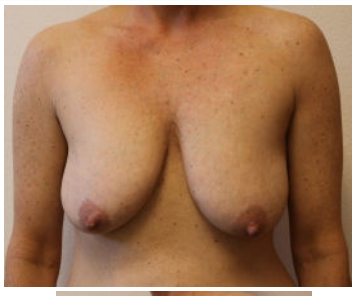
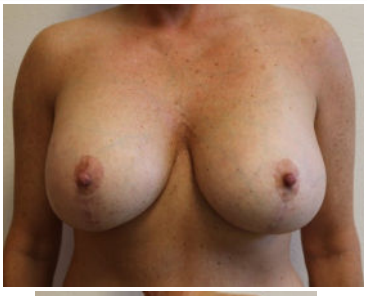
This 29 year-old mother of three is 5 feet 6 inches tall and weighs 120 pounds. She underwent a vertical pattern mastopexy and augmentation with 350 cc round silicone gel breast implants. She wore a 34B bra before surgery and 32DD after. Her result is shown at 7 months.

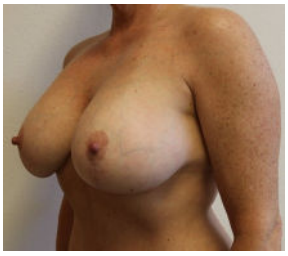





This 51 year-old woman has two children. She is 5 feet 7 inches tall and weighs 150 pounds. She underwent a vertical pattern mastopexy and augmentation with 325 cc round silicone gel implants. She wore a 34C bra before surgery and 34DD after. Her result is shown one year after the procedure.

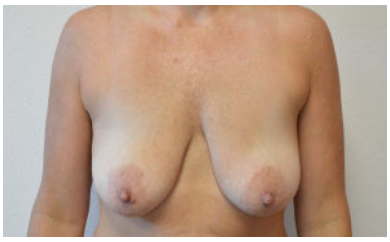
Inverted-T pattern mastopexy

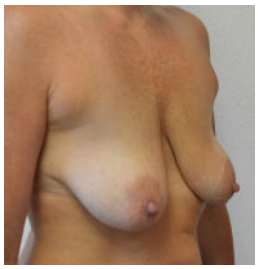
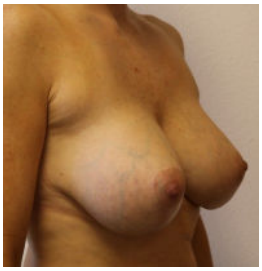
The inverted-T pattern mastopexy results in scars that go around the areolas, down to the bottom of the breasts, then along the crease near the bottom of the breasts. It's a good option for a woman whose nipples are located below the inframammary creases and who has a lot of loose skin. Weight-loss patients often undergo this type of procedure.

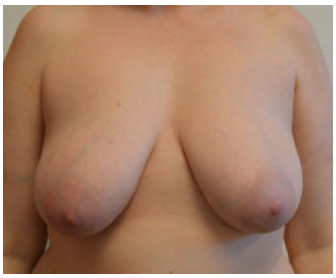


This 45 year-old woman is 5 feet 3 inches tall, weighs 125 pounds, and has two children. She underwent mastopexies and augmentation with 400 ml round silicone gel implants. She wore a 36C bra before surgery and 34DD after. Her result is shown 1 year after the surgery.



This 38 year-old mother of two is 5 feet 6 inches tall and weighs 142 pounds. She underwent inverted-T pattern mastopexies and augmentation with 415 ml round silicone implants. She wore a 34DD bra before surgery and a 34DDD after.




This 34 year-old woman liked her size and the way she looked in a bra. She wanted a lifted appearance but did not want more fullness. She underwent an inverted-T pattern mastopexy *<u>without</u>* having implants placed. She wore a 38DD bra before and a 38D after surgery.

Fat grafting

A nice option for some women is to take fat from one area of their body and add it to the breasts. It may be possible, for instance, to do liposuction of the abdomen and/or thighs and then add that fat to the breasts. This is something that is commonly done for breast cancer patients. As techniques have continued to evolve and improve, many women undergoing cosmetic breast surgery also choose to undergo this procedure.

Adding fat to a breast can do a few things. It adds some volume and shape. Fat grafting probably shouldn't be thought of as adding the same amount of volume or shape that a breast implant does. A breast implant adds volume and shape in almost all areas of the breast, including the lower, upper, inner, and outer areas. One of the 'downsides' of breast implants is that gravity pulls them down a bit. Gravity pulls the weight of the implant down, resulting in some stretching of the lower breast tissues. Fat does not act quite like that. Fat is placed in the breast in specific areas using small tubes called cannulas. It may be placed in the middle and upper areas of the breast, for instance, resulting in shape and fullness there. Gravity does not pull the fat into the lower parts of the breasts, so there's not as much stretching of the lower breast as with an implant.

Fat grafting can be a nice addition for a woman who wants a breast lift but does not want breast implants. Her nipples may be repositioned to a new position, the lower parts of the breasts may be tightened, and then fat may be added to the central and upper areas of the breasts. This results in shape and volume in the central and upper breast areas without as much stretching in the lower breasts that would result from breast implants. Fat grafting does not creates as much additional volume as implants, but can add to the final shape.

Some women who undergo breast augmentation may also benefit from fat grafting. Adding fat around the periphery of the implants may soften the appearance of the edges of the breasts and help minimize visible wrinkling in those areas. Adding fat centrally can help improve cleavage. Adding fat at the top of the breasts may smooth the transition from the chest to the breasts. Grafting fat toward the sides may help increase thickness of tissues in the area most prone to seeing wrinkles in the implants, helping minimize that outcome.

Fat grafting is not new or experimental. It works. However, there are some risks. For instance, studies indicate that about 60% of the volume achieved at the time of surgery is maintained over time. That means that about 40% of the volume is lost. The result seen in the first few weeks after surgery shrinks by about 40%. Most of the time this appears to be related to shrinkage of the fat cells. It is possible, though, for some of the transplanted fat to die. This is called fat necrosis and, while uncommon, fat necrosis can result in firm nodules in the breasts. It may not be possible to remove those nodules.

Some people have been concerned that adding fat to the breasts may make it harder for a radiologist to interpret mammograms. Studies have found that when mammograms of these patients are done at breast imaging centers, the doctors reading the mammograms have little to no problem differentiating fat nodules from breast cancer. While a fat necrosis nodule could result in a woman having to undergo a breast biopsy, this is uncommon.

Most women undergoing cosmetic breast surgery do not choose fat grafting. It is a nice option and something to consider. Plus, the woman also achieves new contours in the areas from which the fat was taken. New breasts, new tummy, new thighs...pretty intriguing!

Breast augmentation surgery: What are the risks?

The vast majority of women who undergo breast augmentation are very happy with their results. However, some women may experience problems. Some of the risks of breast implant surgery are discussed on the following pages.

Ripples - All breast implants have some folds. The folds of saline-filled implants are more "crinkly" to the touch than silicone-filled implants. A woman with thin skin and relatively small breasts is more likely to develop noticeable ripples in her implants than a woman who has more breast tissue. The larger the breast implants that a woman chooses and the thinner her skin, the more likely it will be that ripples will be noticeable.

Loss of sensation - It is possible to lose feeling in the nipple or skin of one or both breasts. This occurs in about 15% of women who undergo breast implant surgery.

Unhappiness with the size - In my experience the majority of women undergoing breast augmentation want enlargement that results in a balanced, proportional look. After discussing the woman's particular desires and evaluating her physical findings, I discuss with her the size and profile of implants that I think may help provide an optimal result. Once healing from the surgery is completed, however, a woman may think that her breasts are larger or smaller than she thought they would be.

Asymmetry - Most women do not have breasts that are exactly symmetrical *before* undergoing breast augmentation.. Asymmetries that exist before surgery may be more noticeable after breast enlargement surgery. Additionally, breasts that appeared fairly symmetrical before surgery could by asymmetrical after surgery, depending on how the tissues heal.

Capsular contracture - When a device is implanted in a person's body, the person forms a layer of scar around it to isolate it from the body. This is true with all devices, including pacemakers, knee joints, and breast implants. The scar is called a capsule. Some people form thick scars around breast implants. This is called capsular contracture. Contracture happens in about 5% of women who undergo breast augmentation surgery. The cause of this is unknown. It is more common with silicone implants than saline, with smooth surface implants than textured surface implants, and more common when implants are placed in front of the pectoralis muscle than behind. If capsular contracture occurs, additional surgery may become necessary.

Displacement - Over time an implant may move a small amount. An implant may move down on the chest a little, or it may move over toward the side of the chest.

Infection - While uncommon, infections may occur. If a breast implant becomes infected, it is likely that it will need to be removed. There is some thought that late infections may also occur, unrelated to the surgery but caused by bacteria transiently passing through the blood (possibly from a sore throat, for instance, or a urinary tract infection). Because of this, some doctors recommend that women with breast implants use antibiotics when they have dental or other surgical procedures performed.

Bleeding - Also uncommon, bleeding may occur around the time that a breast enlargement operation is performed. If this occurs, the blood may need to be removed surgically.

Pain - Some pain around the time of surgery is not unusual. However, infrequently a woman may notice pain in the breast for a long time. The pain may be noticed when doing certain activities or motions, but it is possible to

Risks of breast implant surgery (continued)

have pain even without doing any specific activities.

"Double bubble" - The area along the bottom of the breast where the breast attaches to the chest is called the inframammary fold. Infrequently this fold may be pushed forward by a breast implant, resulting in a line that may be visible in and out of clothing along the lower part of the breast . This may occur when the bottom of the implant sits lower than the previous location of the inframammary fold.

Anaplastic large cell lymphoma (ALCL)- This is a rare kind of cancer of the blood system. Lymphoma results when a person's white blood cells that normally fight infection grow out of control. Some women who have breast implants have developed a very rare type of ALCL in the scar tissue that forms around a breast implant. It is estimated that worldwide, approximately 20 - 30 million women have undergone breast implant surgery. Of those, as of the time of writing this booklet, 573 have developed this problem (320 women in the U.S.). Commonly referred to as *breast implant-associated ALCL* (BIA-ALCL), it has been found that all 573 of the women had *textured surface* breast implants. No woman who has only had smooth surface implants has ever developed BIA-ALCL. About 80% of the women who developed BIA-ALCL had textured surface implants from one company, Allergan. Because of this, the FDA had Allergan stop selling their textured surface breast implants in 2019 until more studies could be done.

BIA-ALCL typically shows up as swelling in one breast several years after the implants were placed. When found early (and almost all cases are), the treatment is typically to remove the implants and the scar tissue capsules around them. New implants may even usually be placed at that time. A few women with more advanced cases required chemotherapy treatments.

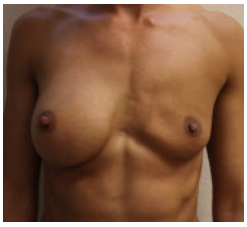
It has been estimated that the risk of a woman who has Allergan's textured surface breast implants of developing this disease is about 1 in 3,500 (0.0003%). While that's a pretty small number, it's not small if you have those types of implants. Textured surface implants are almost never used in the United States today. They are more commonly used in other countries. I do not use textured surface implants for cosmetic or reconstructive breast surgery unless there is some extremely unusual circumstance. This issue is discussed with each of our patients.

Breast implant illness (BII) - Some women who have breast implants report symptoms of fatigue, joint pains, "brain fog", rashes, sensitivity to light, and hair loss, among others. They believe their breast implants have either caused or contribute to these symptoms. Collectively these symptoms are referred to as breast implant illness. This is not a recognized medical illness or condition, but rather a group of symptoms. Some of the symptoms are similar to those of women who have diagnosed connective tissue disorders and autoimmune diseases. Many of these women found their symptoms improved once their implants were removed. Published studies in medical journals have not shown a cause-and-effect relationship between implants and autoimmune diseases. A few studies have found an increased incidence of autoimmune disorders like Sjogren Syndrome and rheumatoid arthritis in women who have silicone gel implants. The numbers of women who developed these problems was small overall, but more women who have silicone implants have these issues than women who have never had silicone implants.

Interference with mammograms - A common concern with breast implants is that they may interfere with mammograms. Silicone gel-filled implants are opaque to x-rays, meaning that the implants may mask surrounding breast tissues on ordinary mammograms. Saline implants are less opaque to x-rays but may also make interpretation of mammograms difficult. Women with breast implants should have mammograms done at centers that specialize in breast imaging. Special views, using what is called the Eklund technique, are necessary to help optimize the viewing of breast tissue in women who have breast implants.

Implant leak/rupture

Any medical device implanted in a person's body will eventually wear out. While the exact length of time that a silicone or saline breast implant will last is not known, the average length of time is probably between 12 and 15 years.



Signs of a leaking or ruptured *saline* breast implant: When a saline breast implant leaks, the body absorbs the saline and the breast becomes noticeably smaller. The leaked saline is absorbed over time. A woman may notice that her breast becomes significantly softer, and an edge of the implant may be felt. The photograph to the right is of a woman who had a rupture of her left breast saline implant.

Signs of a leaking or ruptured *silicone* breast implant: A ruptured silicone implant may be hard to detect. Sometimes a ruptured silicone implant is found incidentally on a routine mammogram. The woman may not have noticed anything different about her breasts. Some women notice a **bulge** or a lump. When this is evaluated by mammogram or ultrasound or M.R.I., the rupture is detected. Other women may notice **firmness** in a breast that had been soft before. Some women develop **pain** in the breast.

What to do if an implant rupture is suspected: When an implant rupture is suspected, a woman will often contact the surgeon who placed the implant or she may contact her primary care physician or gynecologist. An evaluation by one of these physicians will help lead to the confirmation of implant rupture, and a few tests may need to be performed. Usually a **mammogram** and possibly a **sonogram** will be ordered initially. It is probably best that these tests be performed at a center that specializes in breast imaging, rather than at a general radiology center or hospital. After these tests, if questions remain, an **MRI** may be requested. An MRI is the most sensitive diagnostic test for implant rupture. If an MRI is highly suspicious for implant rupture, chances are high that the implant is indeed ruptured. An MRI that does not show rupture of an implant does not necessarily mean that the implant is *not* ruptured, but the likelihood of rupture in this case is diminished.

A woman with a ruptured implant usually will go to see a plastic surgeon. If this is the same surgeon who placed the implants, he or she may still have records. However, if the woman has moved to a different city, the new surgeon will not have those records. Some specific information about the implant will be helpful. Knowing the date (or at least the year), the surgical facility's name, and the name of the surgeon who placed the implant will aid in a search for the appropriate records. If the original surgeon does not have records, the surgical facility may have them. **The information that is necessary includes the date of the surgery, which company made the implant, the volume of saline or silicone within the implant, whether the implant is placed "above" or "below" the pectoralis muscle, and whether the implant is round or "shaped". All implants have serial numbers and these are helpful as well.**

The reason this information is necessary is because **the implant companies have excellent warranties**. Each company has a slightly different warranty, but a few items are common. Each company typically will give the woman at least one free implant, regardless how long it has been since the implant was placed. The companies also typically will, for a specific number of years after an implant was placed, provide a cash allowance to help offset some of the associated costs for the surgery that is required. This cash allowance varies between the companies. Once a rupture is diagnosed, the plastic surgeon will contact the appropriate implant company. If there is no record available about which company made the implant, it may not be possible to activate the appropriate warranty. No company will provide one or two implants plus a significant amount of money without any evidence that the ruptured implant was actually made by that company.

At this time, insurance companies often (but not always) will pay to have a ruptured silicone implant removed. They usually will not pay to have a saline implant removed. **Insurance companies almost never pay the costs associated with putting in a new breast implant or a breast lift**, unless the original reason for the implants was reconstruction after a mastectomy for breast cancer.

Breast lift surgery: risks

Previous pages discussed some of the risks of breast implants. Breast lift surgery has its own risks as well. As with breast augmentation, the vast majority of women who undergo mastopexy surgery are very happy with their results. Problems may arise with any surgery, however, and some of the more significant issues related to breast lift surgery are discussed below.

Wound healing problems - It is possible to have difficulty healing along incision lines. In my experience, this type problem is more likely to occur in a woman who has substantially droopy breasts and who want large breast implants. **People who smoke have a significantly increased risk of wound healing problems.** A woman who smokes should not undergo mastopexy surgery; she should stop all nicotine use for at least 6 weeks before surgery and 3 weeks after surgery.

Asymmetries - On the day of surgery I see the woman and place marks on her before the procedure takes place. I use measuring tapes to help guide placement of the markings, helping achieve as much symmetry as possible. When the swelling goes down and healing is complete after surgery, a woman could find some asymmetries between her breasts, including nipple position, implant position, and breast shape.

Scars - It typically takes between 8 and 12 months for scars to fade. The final scars may be more noticeable than a woman desires. She could ultimately want or need surgery to help improve her scars.

Sutures that may be felt - During a periareolar mastopexy a permanent suture is placed to maintain the shape and size of the areola. This suture does not dissolve. A woman who undergoes a periareolar mastopexy may feel this suture under the skin around the edge of the areola after surgery.

Breasts not as large as a woman may want to be - As discussed above, wound healing problems are possible with mastopexy operations. Placing large breast implants while removing a lot of skin at the same time is likely to lead to problems. Placing moderate size or smallish type implants typically will create a pleasing amount of fullness while minimizing tension on the suture line. However, a woman may ultimately find that her breasts are not as full as she might optimally want after this operation. In this case, she may want to replace the implants with larger implants at a later time.

Loss of the nipple/areola - This extremely rare event may take place if the circulation to the nipple and areola is disrupted. Aggressive removal of skin and placement of large implants may also cause circulation problems to the nipple and areola. If this occurs, more surgery may be necessary.

Preparing for surgery: what to do

Once a woman has decided to proceed with surgery and a date has been selected, there are a few things she should consider. Some of them are listed below.

Birth control pills - Conflicting data exists related to the use of birth control pills and the development of blood clots in the veins of the legs around the time of surgery. Clearly some women using birth control pills develop deep vein thrombosis (DVT) after undergoing surgical procedures. **We recommend that you not take birth control pills for at least two weeks before and one week after surgery**. Obviously stopping birth control pills has major implications regarding pregnancy, so women and their partners need to put a lot of thought into this.

Smoking - causes problems after surgery, so it should be stopped long before surgery. It is primarily the nicotine that causes the problems, so all forms of nicotine should be stopped. This includes cigarettes and cigars as well as nicotine patches, gum, e-cigarettes, and vapor alternatives like Juul. Smoking causes breathing problems, and smokers tend to cough a lot after surgery. Coughing causes some pain in the chest, which makes the experience less pleasant. Additionally, smoking causes problems with the way wounds heal. **Women who are undergoing breast augmentation should stop smoking at least one, and preferably three, weeks before surgery**. **Women who plan to undergo a *mastopexy* should stop smoking for *two to three months* before surgery**. It is also advisable to stay away from people who smoke ("second-hand smoke") for 3 weeks after surgery as well.

10 days before surgery: - Stop taking all medications that may cause extra bleeding. The most important medication to stop is aspirin. Aspirin may also be found in medications such as BC Powder, Anacin, and Excedrin. While it would be uncommon to perform breast enhancement surgery on women taking Coumadin, Eliquis, Xarelto, or Pradaxa, these blood-thinning medications should also be stopped. A woman should check with her primary care physician before stopping these types of blood thinning medications, as these are typically used to treat more serious conditions.

3 days before surgery - Take care *before* surgery of all of the things that will be needed *after* surgery. Arrangements should be made for transportation of children for after surgery. Ideally it would be best to arrange for alternative transportation for children for about a week. Also, arranging for someone to help with small children is recommended. Lifting small children is probably best left to someone else for about a week after the operation. Check in with the surgical facility where the procedure is scheduled. Some facilities require blood work or other tests before surgery. Knowing the exact location and the time required to get to the facility will ease anxiety on the day of surgery. Pick up prescriptions; this saves some "running around" after the operation. Also buy some Gatorade, Sprite, apple juice, or some other sugary beverage . Drinks containing sugar can be very helpful in the first few hours after surgery. The sugar is easily absorbed and provides some energy without creating much nausea.

The day before surgery - Although it may be more easily said than done, try to remain calm. Having done your homework, you should feel good about the decisions you have made. You have had thoughtful, meaningful discussions with us here in the office. You have communicated what you hope to achieve, and together with us you have come up with a plan that is likely to lead to a fabulous result! Eat well but make sure not to eat or drink anything after midnight on the night before surgery. Do not drink coffee, juice, water, or anything else on the morning of surgery.

The day of surgery - Take a loose-fitting shirt that buttons up the front to the surgical facility. It will be easier to put that on after surgery than a pullover shirt. **Do not eat or drink anything!** Believe it or not this includes chewing any gum! Arrive at the facility bout 1½ - 2 hours before the scheduled start of surgery time.

The Day of Surgery: Things to Know

The day of surgery can be pretty hectic. To help make that day go a little easier, here are a few things you should know.

THE FACILITY - Breast enhancement surgery may take place in a hospital, an outpatient surgery center, or in an office-based surgical facility. I perform this type of surgery most often in an outpatient surgery center. There are times that the procedure is done at a hospital. For instance, if the breast surgery is being combined with another operation like a tummy tuck, if the woman has a particular preference, or related to other scheduling issues, the operation may take place in a hospital.

ANESTHESIA - I do these procedures with the woman undergoing *general anesthesia*. Under the guidance of a Board certified anesthesiologist the woman is put to sleep for the entire procedure. A breathing tube is inserted to help safely maintain and monitor the woman's breathing and oxygenation. She is completely asleep, unaware of the surroundings and not feeling any discomfort. Upon completion of the surgery the breathing tube is removed and the woman wakes up in the recovery area of the surgical facility. Infrequently a woman may have a sore throat for a day or two related to the breathing tube.

LENGTH OF SURGERY - A patient should expect to spend about half of a day at the surgical facility. The length of the surgical procedure varies, typically lasting between one and three hours. For a woman undergoing a breast augmentation procedure alone, the operation usually takes about an hour. A mastopexy (breast lift) without implants may take between 1½ and 2½ hours. A mastopexy with an augmentation often lasts 2½ to 3½ hours.

The times just listed are the usual times required for the surgery itself. However, the surgical facilities typically want the patient to arrive about 1½ -2 hours before the time that the surgery is scheduled to take place. That is, for an operation scheduled for 9 a.m., the facility usually requests that she arrive at 7:30. That allows time for her to check in at the registration desk, change clothing, have any blood work done, and have an i.v. started. I also see the patient during this time, going over the surgery and placing markings.

After surgery a variable amount of time is spent in the recovery room. Usually this recovery period takes between 45-90 minutes. However, it may take a little longer for women who take a little longer to fully wake up after surgery or if someone is nauseated.

In summary, the amount of time that should be anticipated for a breast augmentation would be: arrive 2 hours before surgery + 1 hour for the surgery + 1 hour in recovery = 4 hours. The actual time may vary from this, but this is a general estimate. Add about an hour for a mastopexy alone, and between 1½ to 2 hours for a mastopexy with augmentation.

LEAVING THE SURGICAL FACILITY - Because of the level of anesthesia involved, the patient will not be able to drive for the rest of the day on which the surgery takes place. Someone will need to drive her home, or to a friend's home, or to a local hotel (for women who come from out of town). In addition, an adult should stay with her that night just to make sure that there are no problems. While major problems almost never occur, it is important to be cautious.

After surgery: what to know

The day of surgery: ***immediately after surgery*** - Most women have a relatively quick, uneventful recovery from anesthesia. Usually about an hour is spent in the recovery room. The nurses make sure the woman is doing well, and she is not sent home until she is awake and able to drink liquids. Written instructions are provided to the person who will be taking her home after surgery.

The day of surgery: ***that afternoon and evening*** - Some women are pretty sleepy and it is okay for them to rest in bed. However, women who do best after surgery get up and walk around as often as possible. It is all right to go out that evening as long as someone else does the driving. Most women are fairly hungry after surgery. However, it is best to drink liquids containing sugar (Sprite, Coke, Gatorade, ginger ale, cranberry juice for instance) for the first two or three hours at home rather than eat heavy foods. Sugar is easily absorbed and provides a source of energy while she is waiting for the nauseating effects of the anesthesia to diminish. Once she is awake and doing well with this after a few hours, other light foods may be taken as well. Milk products and citrus products frequently make nausea worse, so it's best to avoid those for about 24 hours. If an antibiotic was prescribed it should be taken starting this evening. The dressing that was placed at the time of surgery should be left alone. Sponge bathing is okay using soap and water on a washcloth but staying away from the surgical incision sites.

The first few days after surgery - Getting into a fairly normal daily routine as quickly as possible after surgery is helpful in the overall recovery process. Reaching to get dishes out of a cupboard promotes good arm motion, preventing "freezing" of the shoulders. A follow-up appointment will be scheduled for one, two, or three days after surgery. Ideally the dressing that was placed at the time of surgery should be left alone and will be removed during the first follow-up visit. Specific instructions regarding how to take care of the breasts are provided during the first follow-up visit. Most women will begin wearing a sports bra within a few days of the surgery. A soft-form bra may be worn within two weeks, but underwire bras should be avoided for about six weeks.

Medications - A few medications are usually prescribed. All women receive prescriptions for narcotic pain medication and muscle relaxers. Often a non-narcotic pain medication called gabapentin is also prescribed. Women undergoing mastopexy surgery also receive a prescription for an antibiotic (usually cephalexin or azithromycin). If an antibiotic was prescribed it should be taken a few hours after arriving home after surgery. A muscle relaxing medication (usually tizanidine) is prescribed to help prevent muscle tightness. It helps to take this about an hour before bedtime. Some women take this one or two times during the day as well. The narcotic pain medication (usually acetaminophen with codeine or tramadol) may be taken every 4 to 6 hours as needed. Narcotics may cause or increase nausea, so it is best to minimize the use of these. I also prefer patients take either ibuprofen (Motrin, Advil) three times daily or naproxen (Aleve) two times daily for a week after surgery. Many women find ibuprofen to be surprisingly effective and don't take much narcotic at all.

Aspirin should be avoided for about a week after surgery. I also recommend not resuming birth control pills for one week after surgery, as discussed on page 19. Women may resume their other routine medications beginning the day after surgery.

Driving - Most women start driving within two or three days after the surgery. Women who are requiring narcotic pain medications should not drive.

Children - As noted on page 19, arrangements should be made to have help with small children for at least a week after surgery. You should not lift a child out of a crib for a week, and try to avoid lifting small children into high chairs and car seats during this time as well.

Problems - If you are concerned about anything after surgery, please call the office at any time of the day or night, weekday, weekend, or holiday. Fever, persistent nausea, severe pain, and unusual swelling are examples of potential problems that you should call about.

Weight loss patients

Women who lose a lot of weight, whether through diet and exercise or through bariatric surgery, often find that their breasts appear saggy, droopy, and "deflated". Women in this situation usually will need to undergo mastopexy surgery, lifting the nipples to their former positions and tightening the breasts. Placing implants may help restore some of the fullness the patient had prior to losing weight. Weight loss patients are different from women who have not lost a lot of weight in that their skin elasticity is dramatically reduced. At the time that a mastopexy is performed, the skin is surgically tightened as much as is safely possible to help create a pleasing shape. After several months the skin loosens, creating breasts that are not quite as tight as they had been immediately after surgery. The amount the skin will loosen is not predictable. If it loosens more than a woman wants, she may desire another surgical tightening procedure. Also, a woman who had implants placed at the time of the mastopexy may find that, after several months, she does not have the overall fullness that she was hoping to achieve. She may want to have larger implants placed to help her achieve more fullness, particularly along the upper areas of the breasts. These types of changes are not due to a failure of the surgery but rather to the loss of elasticity of the tissues of weight loss patients.

Revision of the result

While almost all women who undergo the types of surgical enhancement procedures discussed in this booklet are very happy with their results, some may desire additional procedures for a number of reasons. The major risks of breast augmentation and mastopexy surgery are discussed on pages 15 - 18. If I perform your surgery and you need or desire revision of your result, and I believe it may actually be possible to make the changes you desire, my office policy is that I will provide my surgical services without charge for 12 months following the initial operation. This policy applies to women who keep their scheduled office appointments after surgery and who comply with recommendations regarding activity level and surgical site care. You will be responsible for additional charges from the surgical facility, the anesthesia, the costs of different implants (if different implants are used), additional medications, and additional supplies.

Final comments

Most women who decide to undergo surgical enhancement of their breasts have thought about it for a long time. More information about breast enhancement is available today than ever before. Websites, videos, personal physicians, and friends are all valuable resources in helping a woman make this decision. However, none of these resources provides the **specific** information the individual woman really needs. That information can only be obtained during a consultation with a surgeon who does a lot of cosmetic breast surgery. That surgeon should spend time *listening* to the woman. Rather than telling her what is best for her, the surgeon should help the woman come up with a plan that is specific for her wants and needs.

In this booklet I have attempted to provide important information for a woman who may be considering breast enhancement surgery. After reading this booklet you know by now that many decisions have to be made. Each decision (saline or silicone? incision in the armpit or along the lower part of the breast? Size and profile of the implants?) has advantages and disadvantages. Making decisions includes understanding the trade-offs associated with those decisions. Larger implants may look great during a woman's younger years but may cause back and neck pain when she is older, for instance. One of the goals of this booklet is to reinforce information that should be provided during a consultation with a plastic surgeon.

Breast enhancement procedures do not always work out perfectly for each patient. The women who are happiest with their results tend to be women who have realistic expectations and who have participated in making decisions about their surgery.

The pictures shown in this booklet illustrate the procedures described and are not intended to imply or guarantee a specific result. Each woman's individual result will be different from the results of someone else.

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