Breast Reconstruction Guide

Preparing for Your Surgery and Managing Your Post-Surgical Recovery

MOFFITT CANCER CENTER

Understanding Breast Reconstruction Options:

Preparing For Your Surgery And Managing Your Recovery After Surgery

You may be going through a difficult time right now with a new diagnosis of breast cancer or a strong family history of breast cancer. Decisions will be made regarding your treatment plan and surgical options. Successful surgery requires a partnership between the patient and the surgeon. Your surgeon will discuss with you and your family, if you so desire, the options available to you for breast reconstruction.

The goal of this booklet is to help you make decisions about what type of surgery you and your doctor choose, anticipate what will occur with each surgery and help you manage your care after surgery.

There are multiple options regarding breast reconstruction, each presenting a unique set of issues and questions. This patient education booklet will help answer those questions and act as a reference manual for you. The questions that are not answered here can be answered by our professional team of nurses, doctors, and staff.

This booklet will be useful to you throughout your reconstruction process. The Plastic Surgery team at Moffitt Cancer Center is dedicated to restoring a healthy body image through the most advanced techniques in breast reconstruction.

TABLE OF
Contents

Breast Reconstruction Decision Making Tool **4**

SECTION 1 Your Breast Reconstruction **5**
- **1.1** What Is Breast Reconstruction
- **1.2** Types of Reconstruction
  - Tissue Expander Reconstruction Surgery
  - Latissimus Dorsi Flap Reconstruction Surgery with or without Tissue Expander
  - Abdominal Tissue Flap Reconstruction Surgery (TRAM and DIEP)
  - Oncoplastic Reduction Surgery
  - Direct to Implant Reconstruction Surgery
- **1.3** Nipple Sparing Mastectomy

SECTION 2 Revision and Secondary Breast Reconstruction **32**
- **2.1** Liposuction and Fat Grafting
- **2.2** Scar Revision
- **2.3** Nipple Reconstruction
- **2.4** Nipple-Areola Tattooing

SECTION 3 Breast Imaging for Reconstruction **35**
- **3.1** CT Angiography
- **3.2** Fluorescence Angiography

SECTION 4 Preparing for Surgery and What to Expect **36**
- **4.1** Tips For Your Surgery
- **4.2** Before Surgery Checklist
- **4.3** Day of Surgery
- **4.4** Risk Factors Contributing to Surgical Complications
- **4.5** Medications and Herbals

SECTION 5 Care After Surgery: Optimizing Your Results **44**
- **5.1** What to Expect After Surgery
- **5.2** Instructions When you Go Home
- **5.3** Surgical Drain Care
- **5.4** Managing Your Scar
- **5.5** Implant Massage

SECTION 6 Nutrition **52**

SECTION 7 Support After Breast Reconstructive Surgery **55**
- **7.1** Wellness and Healing Services
- **7.2** Sexuality and Breast Reconstruction
- **7.3** Insurance Coverage
- **7.4** Role of the Caregiver

SECTION 8 Resources **60**
- **8.1** Glossary
- **8.2** Recommended Online Resources

Notes Pages **63**

JP Drain Record **65**

Breast Reconstruction Decision Making Tool

THINGS TO THINK ABOUT	Tissue Expanders/ Implants	Latissimus Flap with Tissue Expander (Lat Flap)	Abdominal Tissue Flap	
			TRAM Pedicle Flap	DIEP Flap (or Muscle Sparing Free TRAM)
Length of Surgery (not including mastectomy)	1-2 hours	3-4 hours	3-6 hours	4-8 hours (one side) 6-10 hours (both sides)
Length in Hospital	1 day	1-2 days	3 days	5 days
Recovery Time (average return to work time)	2-6 weeks	2-6 weeks	6 weeks	6-8 weeks
Total Length of Process	Minimum 9 months	Minimum 9 months	3 months	3 months
Possible Number of Surgeries	3	3	3	2
Use of Implant	Yes	Possibly	No	No
Goal of Appearance	• Requires use of implant • Maintains shape over time	• May require use of implant • More natural looking than implant alone	• Natural looking • Soft to touch • Flatter stomach • Often requires another surgery or breast symmetry	• Natural looking • Minimizes use of abdominal muscle • Soft to touch • Flatter stomach • Often requires another surgery for breast symmetry
RECOMMENDED if you:	• Want a shorter surgery and recovery time • Want both sides reconstructed • Want less pain and scarring after surgery • Do not have enough abdominal tissue	• Have had radiation in the past	• Want natural looking breast(s) • Have enough recovery time and are healthy enough for a long surgery • Have had radiation in the past • Have enough abdominal tissue	• Want natural looking breast(s) • Have enough recovery time and are healthy enough for a long surgery • Have had radiation in the past • Have enough abdominal tissue • Want to maintain abdominal integrity
NOT RECOMMENDED if you:	• Are a smoker • Want the most natural looking breast • Are unable to come to 6-8 weekly visits for expansions	• Are a smoker • Want the most natural looking breast • Are unable to come to 6-8 weekly visits for expansions	• Are a smoker • Are on narcotics for chronic pain • Do not have time off work for a longer recovery time • Have had abdominal surgery (excluding C-sections)	• Are a smoker • Are on narcotics for chronic pain • Have other chronic health problems • Do not have time off work for a longer recovery time

SECTION 1

Your Breast Reconstruction

1.1 What is Breast Reconstruction?

The goal of this booklet is to help guide you through your breast reconstruction journey. This booklet discusses the different reconstruction options and helps you and your plastic surgeon decide what type of reconstruction is best for you. It is important to know that not all options are possible for you. You and your plastic surgery team will discuss the options best for you. Just like breast cancer, no two patients are exactly alike and sometimes one size does not fit all.

There are basically two main categories of breast reconstruction: reconstruction with implants and reconstruction using your own body tissue. Sometimes there is a need to combine these two types of reconstruction.

The most common form of breast reconstruction utilizes a breast implant to build a breast mound. Implant reconstruction generally requires less extensive surgery, but more procedures (at least two) are required to complete the process. Additionally, reconstruction with implants often requires the use of tissue expanders. There are a few circumstances when implant reconstruction with either silicone gel or saline implants can be performed without the use of a tissue expander. This is known as Direct to Implant (DTI) reconstruction. We will discuss this further along in the booklet.

What is the difference between immediate reconstruction and delayed reconstruction?

Immediate reconstruction is any type of reconstruction that is done at the time of your mastectomy. Delayed reconstruction is any type of reconstruction that is done after you have healed from the initial cancer surgery and/or other treatments (chemotherapy and/or radiation) or at a date of your choosing.

What if I need radiation?

If you and your surgeon decide you are a good candidate for breast reconstruction, your need for radiation therapy after mastectomy will impact reconstruction options available to you. If there is a question about whether radiation is needed, you will be referred to the radiation oncologist before your surgery.

If radiation therapy is not expected after mastectomy, the reconstruction process can begin at time of surgery.

If radiation therapy is required, your surgeon may recommend that reconstruction be done at a later date.

Sometimes the final pathology shows unexpected findings after your surgery. In these cases, radiation therapy may be recommended after mastectomy.

If you do require radiation, the following can occur:

- If a tissue expander/implant was placed, it may be left in place or removed. Your radiation oncologist may request the expander be deflated before radiation if there is a possibility it may interfere with treatment.

- If you choose reconstruction using your own tissue for coverage, this type of surgery may be done nine to twelve months after radiation therapy is complete.

There are possible risks and side effects of breast reconstruction with radiation therapy. These risks apply when you already have a breast implant in place before your breast cancer treatment begins.

Risks with existing Implants and a mastectomy

If you have an implant from a previous breast augmentation (cosmetic enhancement), the implant may be located in front of the muscle. If this is the case, it may need to be removed and a new one will be placed behind the muscle. If your implant is located behind the muscle, it may be left in place as injury to the implant is less likely to occur. Radiation therapy may increase the chance of capsular contracture occurring. You can read more about capsular contracture in Section 1.2.

What are my options if I do *not* want reconstruction?

It is important to remember that breast reconstruction is not for everyone. Every woman is different and when presented with the choice, some women elect not to have reconstruction. After your mastectomy, you may choose not to undergo reconstruction.

There are options available that may help you feel more comfortable in your clothing and simulate the look of a natural breast under clothing. This may include the use of breast prostheses, forms and bras that can be fitted especially for you.

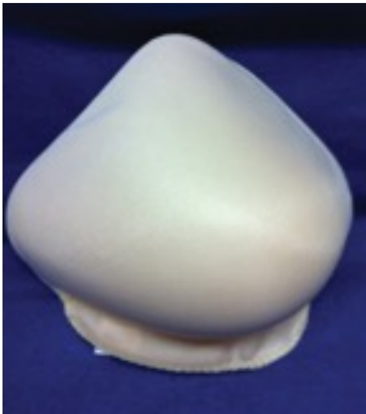
Breast prostheses and forms come in a variety of shapes, sizes and materials. Many are made of new materials that may be lighter, softer and cooler than traditional prostheses. You can make an appointment at specialty stores with someone who has training in fitting bras and forms. There are even options for bathing suits.

Most of these products are covered by your insurance or Medicare. Ask your doctor to write a prescription for your breast prostheses and mastectomy bras. It would be important to know what is covered by insurance and where you may purchase these products. If you are interested in obtaining more information about where to purchase these items and be fitted by a professional, please ask your nurse for a list of resources.

Resources with information about breast prostheses include:

- **WWW.TLCDIRECT.ORG**
  American Cancer Society's TLC Catalog
- **HTTPS://WWW.AMOENA.COM/US-EN/BREAST-FORMS**
  Amoena Breast Forms
- **HTTPS://WWW.BREASTCANCER.ORG/TREATMENT/SURGERY/BREAST-RECONSTRUCTION/PROSTHETICS**
  Breastcancer.org
- **HTTPS://WWW.MEDICARE.GOV/COVERAGE/BREAST-PROSTHESES**
  Breast Prosthesis Coverage – Medicare
- **HTTPS://WWW.CANCERCARE.ORG**
  Prostheses Resources – CancerCare

Examples of Breast Prostheses



1.2 Types of Reconstruction

Tissue Expander Reconstruction Surgery

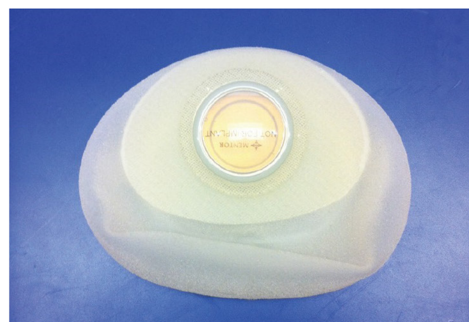
Breast reconstruction with a tissue expander is a two-step process. The first part of the process is the mastectomy or removal of the breast (this may or may not include the removal of your nipple(s)).This part of the surgery is done by your breast surgeon. Once removed, your plastic surgeon will place a temporary breast tissue expander (like a deflated balloon) under your skin, either on top of, or underneath the chest muscle. This balloon-like device allows the skin and muscle to stretch by gradually filling the expander with saline. This process is called tissue expansion. The timing of the visits for expansion will be determined by your plastic surgeon.

Your plastic surgeon may place some fluid in the temporary breast tissue expander at the time of your surgery so when you wake up your chest will have some contour. It can take two to six months to “fill” the tissue expanders to the desired size.

You and your plastic surgeon may decide this surgery is right for you if want a shorter surgery and recovery time. This may also be the best type of reconstruction for you if you want both sides reconstructed with less pain and scarring after surgery. This surgery would not be the best choice for you if want the most natural looking breast or are unable to come to weekly visits for “fills” or expansions.

The length of this entire reconstruction process varies. Your doctor guarantees the breasts will not look exactly the same when everything is completed. The position of the scars, the way the breast heals and the difference in the amount of fat left on the mastectomy flaps all play a role in the completed look of your reconstruction. Your doctor will do his/her best to make your breasts as even as possible when the tissue expander is removed and replaced with a permanent implant. Additional procedures such as liposuction and fat grafting may be beneficial; however, these additional procedures may not be covered by your insurance.

Dual Port Tissue Expander (not MRI compatible)



Integrated Tissue Expander (not MRI compatible)

What is the difference between breast augmentation and breast reconstruction with an implant?

The main difference between breast reconstruction and breast augmentation for cosmetic enhancement is that breast reconstruction can create the look of a restored breast mound using an implant under the skin and muscle. Irregularities on the implant under the surface of the skin will be more noticeable in a reconstructed breast because the breast tissue has been removed. In augmentation, breast tissue remains in place and the implant sits underneath the breast tissue or underneath the breast tissue and muscle, camouflaging or masking any imperfections.

Breast Implant Reconstruction	Breast Augmentation
No breast tissue left after mastectomy	Breast tissue in place
Tissue expander may be needed to stretch skin/muscle to create pocket for the implant	No expander needed
Saline or silicone implant used	Saline or silicone implant used
Covered by insurance	Self-pay if cosmetic (unless needed for symmetry with a breast cancer diagnosis)
MRI needed to watch for rupture of implant (silicone only)	MRI needed to watch for rupture of implant (silicone only)
Will need to be exchanged at some point, not a lifetime device	Will need to be exchanged at some point, not a lifetime device
*Capsular contracture possible	*Capsular contracture possible

**Capsular contracture will be discussed in the section "What are my risks with this type of reconstruction?"*

What to Expect with Tissue Expansion?

During your tissue expansion process, or "fill," you will come into the clinic to meet with a member of your plastic surgery team. Your nurse or doctor will use a small needle to fill your expander every week with 50-100 milliliters (ml's) of normal saline through a small port on the surface of your expander. This process expands the breast pocket to make room for placing the permanent implant.

Some patients may experience one or all of the following symptoms during tissue expansion:

- Tightness or fullness of the breast
- Soreness
- Muscle spasms
- Pain

These symptoms usually last from one to three days after your tissue expansion but may last longer. To decrease your symptoms, your doctor may recommend:

- Ice packs or warm compresses, such as a moist washcloth. Wrap in a towel and place in a plastic bag to avoid placing directly on your skin.
- Acetaminophen (Tylenol®), Ibuprofen (Advil®) or a muscle relaxant.
- Do not use a heating pad anywhere on your body. You may have lost some sensation from the surgery and will not be able to tell if too much heat is being applied. You may burn yourself.

Call your doctor's office if you experience:

- Redness
- Fever
- Deflation of the expander. You will notice a change in the shape and size of your breast. The tissue will become less firm. This is not an emergency and will not harm you; however, please call your nurse as you will need to be seen by your plastic surgeon.
- Extreme pain

What should I wear?

You may want to wear a two-piece outfit such as pants and a top that either buttons or zips up the front. You may be asked to remove your shirt and change into a gown.

Can I do normal activity after an expansion?

Once your postoperative restrictions have been lifted, you may resume your regular activities after an expansion. Be sure and ask your doctor if you have any questions about specific activities.

Am I able to fly while I have tissue expanders?

Yes, you are able to fly while the tissue expanders are in place. Your expanders do not have any components that set off alarms on airport scanners.

Am I able to have an MRI?

If you have an integrated or internal port in your expander, you cannot have an MRI performed while it is in place since it contains metal.

Exchanging your expander for a permanent implant

The surgery for the expander exchange is an outpatient procedure. This means you do not stay overnight in the hospital. There is minimal pain with this, and you can return to work when your plastic surgeon says it is OK.

- The technique and placement of the scars will be determined by your plastic surgeon at your second phase planning appointment.
- You will have a dressing in place over your incision prior to discharge.
- Drains are normally not required with this surgery; however, if your surgeon thinks it is necessary, one or more drains may be placed.
- Outer dressings may be removed three days after surgery. Dressing instructions will also be provided at the time of discharge from the recovery room.
- The doctor will see you in his/her clinic about one to two weeks after your surgery.

What is the difference between saline and silicone?

Breast implants, whether saline or silicone, all have a silicone shell. Both types of implants come in a wide variety of shapes, sizes, and profiles. Saline implants are inserted into the body without fluid in them. Once in position, the implants are filled with sterile saline (salt water) to the volume you and your plastic surgeon decide. Silicone implants are pre-filled by the manufacturer. Implants may be placed under the muscle, whether for reconstruction or augmentation.

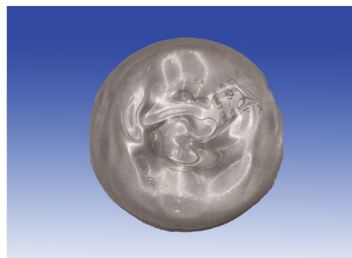
- Rippling of the implant is more visible with saline than with silicone implants. This occurs with reconstruction because of the lack of overlying tissue used to cover the implant.
- There is a smaller scar when saline implants are used for reconstruction.
- There is a lower risk for capsular contracture with saline implants.
- If a saline implant were to rupture, it is seen fairly quickly because of the deflation of the implant.
- Silicone implants do not deflate when ruptured. This is why your doctor may order breast MRIs to make sure a rupture has not occurred.

In the past, there was concern with silicone implants if leaking were to occur. The U.S. Food and Drug Administration (FDA) has since determined that silicone breast implants are safe for both reconstruction and cosmetic applications.

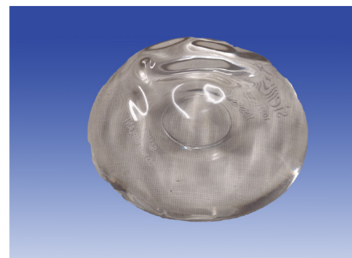
Discuss any concerns you may have about implants with your surgeon. Implants may need to be replaced with surgery at some point in your lifetime. Implants can also leak, tear, or develop scar tissue. Should these occur, the proper management will be discussed with your surgeon.

Examples of Silicone Implant

Side View



Full Frontal View



Angle View

What are my risks with this type of reconstruction?

Your plastic surgeon will advise you of the risks and benefits of this procedure if she/he feels this procedure may be of benefit to you. As with all procedures, there are possible complications with this type of surgery. Your plastic surgeon will discuss possible complications with you at your appointment and again on the day of your surgery.

Possible complications include:

- Infection (possibly requiring implant removal)
- Bleeding
- Scarring
- Muscle and nerve injury
- Asymmetry (breasts not even)
- Deflation of the implant
- Capsular contracture
- Need for further surgery

INFECTION If an infection does occur, it is important it is caught right away. Signs and symptoms of an infection include redness or heat at the site, a cloudy drainage at the incision that has a bad odor, or an increase in your temperature. We want to catch any signs of infection early in the reconstruction process so there is a better chance the reconstruction can be saved. You may need to be admitted to the hospital and started on IV antibiotics through a vein in your arm.

Depending on how bad the infection is, you may need an additional surgery to remove your expander or implant, wash out the cavity and place a new expander or implant. In some cases, the expander or implant may need to be removed while the infection heals and a new one placed at a later surgery.

BLEEDING It is possible, though unusual, to experience bleeding during or after surgery. Should bleeding occur, it may require emergency treatment to drain accumulated blood (hematoma). A hematoma can occur at any time following breast surgery. Do not take aspirin or anti-inflammatory medications for 10 days before or after surgery as these may increase the risk of bleeding. Talk to your plastic surgeon about any nonprescription “herbs” or dietary supplements you take as these can also increase the risk of surgical bleeding.

SCARS Your plastic surgeon will determine the most appropriate incision to be used for your surgery.

CAPSULAR CONTRACTURE Scar tissue that forms around the implant and squeezes the implant is called capsular contracture. There are four grades of contracture (I to IV) that range from soft to hard. Your plastic surgeon may tell you to massage your implants daily. Talk to your plastic surgeon about what she/he recommends.

FAT NECROSIS OR OIL CYST FROM FAT GRAFTING Patients will frequently develop contour abnormalities after mastectomy and reconstruction that can be minimized with fat grafting. Fat is injected after it is harvested elsewhere from the body. When the fat is injected, it fills up the skin and smooths out contour abnormalities. It will frequently result

in small nodules under the skin that can be felt. These can be fat lobules, fat necrosis, or oil cysts. Typically, they are not visible, but can be felt. Many women after a diagnosis of breast cancer are obviously very concerned about any small mass that can be felt under the skin. If this nodule is in an area where fat was injected, it can be monitored by the patient and the doctor. If the nodule changes or is in an area where no fat grafting took place, an ultrasound may be ordered. This is a very effective test to determine if the nodule is consistent with fat necrosis, an oil cyst, or possibly something that needs further workup such as a biopsy.

MUSCLE AND NERVE INJURY There is the potential for injury to deeper structures including nerves, blood vessels, muscles and lungs during any surgical procedure. The potential for this to occur varies according to the type of procedure being performed. Injury to deeper structures may be temporary or permanent.

ASYMMETRY Some breast asymmetry naturally occurs in most women. Differences in breast and nipple shape, size, or symmetry may also occur after surgery. Additional surgery may be necessary to correct asymmetry after breast reconstruction.

NEED FOR FURTHER SURGERY Many variable conditions can influence the long-term result of breast reconstruction. Secondary surgery may be necessary to perform additional tightening or repositioning of the breasts.

How long will I be in surgery?

Your surgery may take one to two hours if you are having one breast reconstructed and two to three hours when both breasts are reconstructed. You will then go to the recovery room and a member of the plastic surgery team will talk to your family. After about 30 minutes to an hour, you will go to your hospital room.

How long will I be in the hospital?

Most patients are in the hospital overnight and go home the next day. You should expect to get out of bed to sit in a chair that evening. You may also be asked to get up and walk around.

How long will it take for me to recover from the surgery?

Some women require six weeks and others only require two weeks. We advise our patients to expect to take six weeks off work after your surgery. It is not possible to determine ahead of time how the surgery will affect you. One to two weeks after your surgery, you will see your plastic surgery team to evaluate your recovery.

Will I have dressings in place?

You may or may not have a dressing in place. Your incision is closed with absorbable sutures, which means stitches will not need to be removed later. There may also be small strips of paper adhesive over the incision called steri-strips. If these strips are used, they should remain in place until they fall off by themselves or are removed by your plastic surgery team. There may be an outer dressing that includes a white piece of telfa which is secured in place with a thin piece of clear tape called Tegaderm™. In most cases, you will not have a dressing and your incision will be closed with surgical glue.

You may shower when directed by your plastic surgeon. Dressings and/or steri-strips covering incisions are waterproof. When showering, do not allow the water jet from the shower to directly hit the dressings and/or steri-strips; let the water gently roll over your shoulders. Blot dry when you are done. Do not soak in a tub or get in a pool or hot tub until advised by your plastic surgeon.

If you have a dressing in place, your plastic surgery team will provide instructions before discharge.

Drain care

You may have multiple drains placed at the time of surgery. These are small tubes that drain any excess blood or fluid from your surgical area. You and your caregiver will be taught how to take care of your drain(s) before you go home from the hospital. Each drain is secured in place with a single small suture. When you are home, expect the drains to be uncomfortable. This is normal. Please refer to the “Surgical Drain Care” section for more instruction.

Pain control

Your pain will be controlled by oral pain medication (taken by mouth). If you need more pain medication while you are in the hospital, you may have a small button that you can push called a PCA (patient controlled analgesia) that will give you pain medication by an IV in your arm. These medications can cause nausea, so there will be other medications to help prevent this. You will be discharged home the next day with oral pain medication, a stool softener and possibly antibiotics. If your pain is not controlled with the pain medication prescribed for you at home, please call the clinic to notify your nurse. After hours, you will be connected to the plastic surgery team on call.

Activity

You should not resume any exercise activity until the drains are removed. Do not go for long walks around the neighborhood, go shopping for hours, or perform a lot of physical activity. You want to take it easy until the drains are removed. The more exercise and activity you do, the longer you will have to keep the drains. Motion does not allow your healing skin to stick to the underlying muscle and tissue. This does not mean you must keep your arms still or remain immobile in bed. It is recommended you do normal household activities, such as your hair and preparing dinner, but it is important that you do not physically strain yourself. During this time of recovery, it may be helpful to arrange for extra help with cleaning, driving and running errands. You will not be able to drive until you no longer need and are not taking your pain medication.

Latissimus Dorsi Flap Reconstruction Surgery With or Without Tissue Expander

A latissimus dorsi flap or "lat flap" is done at the time of your mastectomy or after the mastectomy has been done and your breast cancer has been treated. This reconstruction may be an option for you if you have had radiation, a history of a failed flap procedure, or need additional soft tissue for your breast reconstruction. In this procedure, your back muscle and skin are moved to the chest to make a new breast.

This procedure will make a scar on the side of your chest under your arm or along your bra-line on the back.

The plastic surgeon will likely place a tissue expander (like a deflated balloon) or implant under your skin and muscle. If a tissue expander is placed, fluid may be added to the expander at the time of the surgery so when you wake up you will have small contour. Once you are expanded to the size you and your plastic surgeon decide upon, the expander will be replaced with an implant.

Latissimus Dorsi Flap

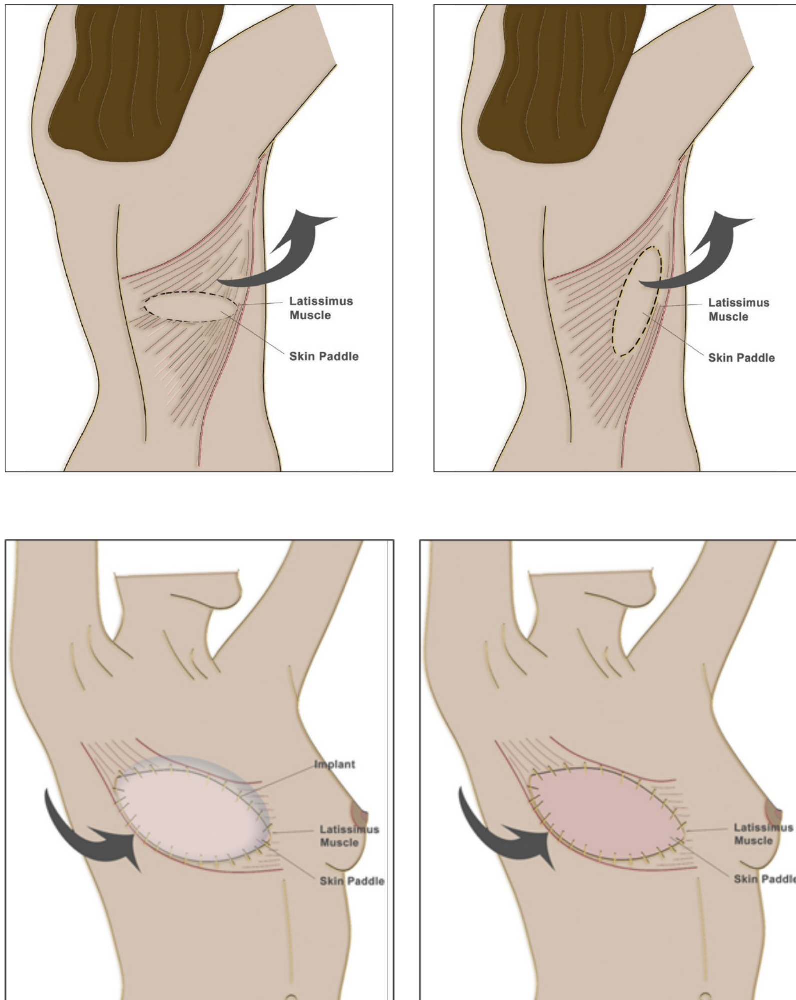


Illustration by Teresanne Cossetta Russell

Using the back muscle for this type of surgery is always a concern for patients. It will not limit you from reaching up to take things from high shelves or keep you from activities such as playing golf, tennis, or swimming.

How long is the surgery?

The surgery takes about three hours for one side. Based on the amount of skin that needs replacing and the length of the scars, it may take longer. Doing both sides usually takes about six hours. You will then go to the recovery room and a member of the plastic surgery team will talk with your family. After about 30 minutes to an hour you will go to your hospital room.

How long will I be in the hospital?

You will spend the night in the hospital, possibly two nights. You will be able to have a meal and should expect to get out of bed to sit in a chair that evening. You may also be asked to get up and walk around.

How long will it take for me to recover from the surgery?

Expect to take six weeks off work after your surgery. Some patients require six weeks and others only require two weeks. It is not possible to determine ahead of time how the surgery will affect you; plan on telling your employer six weeks.

You will see the plastic surgery team one week after your surgery. They will look at the incisions and possibly remove the drains. Drain removal is often a relief to women after having them for a week or two. The removal occurs in the doctor's office and most women do not experience pain when they are removed.

Will I have dressings in place?

You may or may not have a dressing in place. Your incision is closed with absorbable sutures, which means stitches will not need to be removed later. There may also be small strips of paper adhesive over the incision called steri-strips. If these strips are used, they should remain in place until they fall off by themselves or are removed by your plastic surgery team. There may be an outer dressing that includes a white piece of telfa which is secured in place with a thin piece of clear tape called Tegaderm™. In most cases, you will not have a dressing and your incision will be closed with surgical glue.

You may shower when directed by your plastic surgeon. Dressings and/or steri-strips covering incisions are waterproof. When showering, do not allow the water jet from the shower to directly hit the dressings and/or steri-strips; let the water gently roll over your shoulders. Blot dry when you are done. Do not soak in a tub or get in a pool or hot tub until advised by your plastic surgeon.

If you have a dressing in place, your plastic surgery team will provide instructions before discharge.

Drain care

You may have multiple drains placed at the time of surgery. These are small tubes that drain any excess blood or fluid from your surgical site. You and your caregiver will be taught how to take care of your drain(s) before you go home from the hospital. Each drain is secured in place with a single small suture. When you are home, expect the drains to be uncomfortable. This is normal. Please refer to the "Surgical Drain Care" section for more instruction.

Pain control

Your pain will be controlled by oral pain medication (taken by mouth). If you need more pain medication while you are in the hospital, you may have a small button that you can push called a PCA (patient controlled analgesia) that will give you pain medication by an IV in your arm.

These medications can cause nausea, so there will be other medications to help prevent this. You will be discharged home the next day with oral pain medication, antibiotics and a stool softener. If your pain is not controlled with the pain medication prescribed for you at home, please call the clinic to notify your nurse. After hours, you will be connected to the plastic surgery team on call.

Activity

You should not resume any exercise activity until the drains are removed. Do not go for long walks around the neighborhood, go shopping for hours, or perform a lot of physical activity. You want to take it easy until the drains are removed. The more exercise and activity you do, the longer you will have to keep the drains. Motion does not allow your healing skin to stick to the underlying muscle and tissue. This does not mean you must keep your arms still or remain immobile in bed. It is recommended you do normal household activities, such as your hair and preparing dinner, but it is important that you do not physically strain yourself. During this time of recovery, it may be helpful to arrange for extra help with cleaning, driving and running errands. You will not be able to drive until you no longer need and are not taking your pain medication.

Abdominal Tissue Flap Reconstruction Surgery (TRAM or DIEP)

Abdominal tissue flap reconstruction moves tissue from the abdomen to the chest for breast reconstruction. It is done either at the time of your mastectomy, or after the mastectomy has been done and your breast cancer has been treated. Flap reconstruction is typically used for patients who have had a history of radiation, want their reconstructed breast to match their native breast, or do not want an implant. This type of surgery requires an incision on the lower abdomen from hip to hip. If you do not have excess abdominal tissue, you may not be a candidate for this type of flap reconstruction.

What are the types of abdominal tissue flaps?

There are two types of abdominal flaps (TRAM and DIEP) that are used to reconstruct breasts. You and your plastic surgeon will discuss which is best for you.

TRAM (Pedicle) Flap

This type of flap uses tissue and muscle (including skin, fat, and blood vessels) from the lower abdominal wall to reconstruct a breast mound. It is pedicled (left attached to its base and then tunneled under the skin to the chest area).

TRAM (Pedicle) Flap

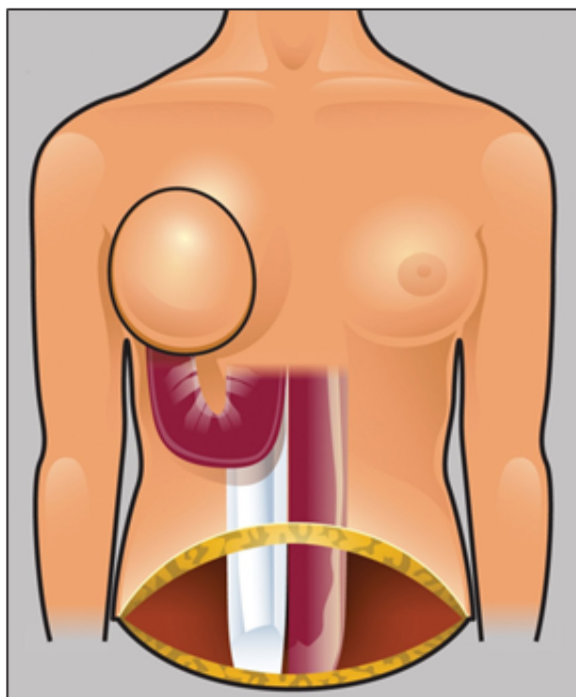


Illustration by Teresanne Cossetta Russell

Flap reconstruction may require three surgeries.

- The first of these surgeries is called a delay procedure and is done two weeks prior the flap reconstruction surgery. Your plastic surgeon will place permanent clips on the blood vessels that supply blood to your rectus muscle, or the muscles on each side of your abdomen, to re-route the blood flow. Your plastic surgeon will inform you if you should need this surgery. The DIEP flap does not require a delay procedure.

- The second surgery is the flap reconstruction where the muscle and tissue are moved to form a breast.

- The third is the nipple reconstruction and any lifting or adjusting of the native breast or reconstructed breast is done to make the breasts as even as possible.

Taking the rectus abdominis muscle, or the muscles on each side of your abdomen, is always a concern for patients. This type of surgery will not limit you from reaching up, taking things off of high shelves, picking things up off the floor, playing golf, tennis, or swimming. It will not limit your activities of daily living.

If only one breast is reconstructed, only one of the two rectus abdominus muscles will need to be taken. After bilateral (both breasts) mastectomies and reconstruction, both rectus abdominus muscles are needed.

Even without your rectus muscles, you have other muscles called external obliques, internal obliques, and transversus muscles that will help compensate for the missing muscle.

A piece of mesh is used under the skin on the abdomen to replace what is removed. Without the mesh and without the muscle, the abdomen can become weak, and a bulge can form. This is not a true hernia, but some people may call it that. This normally does not happen if mesh is placed. The mesh will not disrupt any future surgeries in your abdomen. The mesh becomes incorporated in the tissues and acts just like any other layer of the body.

This surgery takes about four hours for one side; both sides can take up to eight hours. Based on the amount of skin that needs replacing and the length of the scars, it may be longer. When you wake up you will have a breast. You will be sore mainly in the abdomen. You will be in a flexed position (not lying completely flat) in the bed and will need to remain flexed like this for the first 10 days. You may be most comfortable in a recliner.

What to expect after the TRAM Flap?

When the staff is helping you walk on your first day after surgery, you will need to walk in a bent over position. This takes tension off of the abdominal incision line. Walking like this over time may cause a low back ache, which is to be expected.

Will I have dressings in place?

You may or may not have a dressing in place. Your incision is closed with absorbable sutures, which means stitches will not need to be removed later. There may also be small strips of paper adhesive over the incision called steri-strips. If these strips are used, they should remain in place until they fall off by themselves or are removed by your plastic surgery team. There may be an outer dressing that includes a white piece of telfa which is secured in place with a thin piece of clear tape called Tegaderm™. In most cases, you will not have a dressing and your incision will be closed with surgical glue.

You may shower when directed by your plastic surgeon. Dressings and/or steri-strips covering incisions are waterproof. When showering, do not allow the water jet from the shower to directly hit the dressings and/or steri-strips; let the water gently roll over your shoulders. Blot dry when you are done. Do not soak in a tub or get in a pool or hot tub until advised by your plastic surgeon.

If you have a dressing in place, your plastic surgery team will provide instructions before discharge.

Drain care

You may have multiple drains placed at the time of surgery. These are small tubes that drain any excess blood or fluid from your surgical area. You and your caregiver will be taught how to take care of your drain(s) before you go home from the hospital. Each drain is secured in place with a single small suture. When you are home, expect the drains to be uncomfortable. This is normal. Please refer to the "Surgical Drain Care" section for more instruction.

Pain control

Your pain will be controlled by oral pain medication (taken by mouth). If you need more pain medication while you are in the hospital, you may have a small button that you can push called a PCA (patient controlled analgesia) that will give you pain medication by an IV in your arm.

These medications can cause nausea, so there will be other medications to help prevent this. You will be discharged home the next day with oral pain medication, antibiotics and a stool softener. If your pain is not controlled with the pain medication prescribed for you at home, please call the clinic to notify your nurse. After hours, you will be connected to the plastic surgery team on call.

Activity

You should not resume any exercise activity until the drains are removed. Do not go for long walks around the neighborhood, go shopping for hours, or perform a lot of physical activity. You want to take it easy until the drains are removed. The more exercise and activity you do, the longer you will have to keep the drains. Motion does not allow your healing skin to stick to the underlying muscle and tissue. This does not mean you must keep your arms still or remain immobile in bed. It is recommended you do normal household activities, such as your hair and preparing dinner, but it is important that you do not physically strain yourself. During this time of recovery, it may be helpful to arrange for extra help with cleaning, driving and running errands. You will not be able to drive until you no longer need and are not taking your pain medication.

DIEP (Deep Inferior Epigastric Artery Perforator) Flap or Muscle Sparing Free TRAM

This type of flap procedure uses fat and skin from the same area as the Tram flap but does not use the muscle to form the breast mound. Blood vessels from the abdominal tissues are attached to chest wall blood vessels with special microscopes.

Sometimes a small piece of muscle needs to be taken in addition to the skin, fat and blood vessels. This may be necessary in some patients to safely preserve the blood vessels supplying your flap. This is called a Muscle Sparing FREE TRAM.

Abdominal wall function after surgery is similar for the DIEP and Muscle Sparing FREE TRAM.

DEIP Flap (Muscle Sparing Free TRAM)

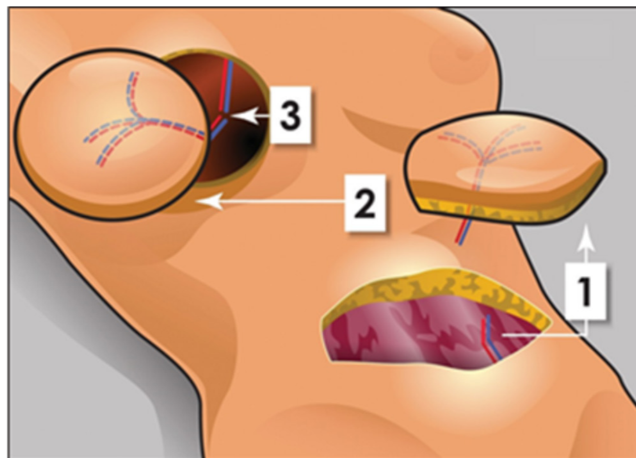


Illustration by Teresanne Cossetta Russell

This procedure usually requires two surgeries. The first procedure involves removing the lower abdominal wall skin and fat tissue along with the blood supply and re-implanting it to the chest wall. Blood vessels from the abdominal tissues are attached to the blood vessels on the chest wall (or sometimes blood vessels in the arm pit area) with the help of a microscope. This is called microvascular surgery.

The main reasons to consider this type of procedure over a more traditional TRAM flap are:

1. To minimize the abdominal wall weakness that can occur after removing the rectus muscle "or the six pack." The DIEP flap or muscle sparing free TRAM procedure tries to leave all or most of the muscle intact. Like a tummy tuck, this operation also leaves a long scar across your lower stomach which is usually concealed by undergarments.

2. An improved blood supply to the flap without performing a delay procedure.

3. Being able to potentially avoid the use of an abdominal mesh.

This procedure takes considerably longer than other procedures because microsurgery is performed. Operating time for the procedure typically lasts six to eight hours, in addition to mastectomy procedure time (if the reconstruction is done at the same time). If this surgery is for both breasts then it might take eight to twelve hours.

The second surgery is for nipple reconstruction and any lifting or adjusting of the remaining breast or reconstructed breast to improve the overall symmetry. This second procedure usually does not take as long as the first one and is usually three months after your first procedure.

Studies have shown that women who undergo abdominal flap reconstructions (TRAM, DIEP flap or free TRAM) have the highest short and long term satisfaction as well as improved quality of life. On the other hand, these procedures are complex and require longer time under anesthesia; therefore, not everyone is a candidate. Additionally, previous abdominal surgeries and a lack of abdominal tissue may prevent you from having these procedures. You and your plastic surgeon will determine what is best for you.

What to expect after the DIEP or Muscle Sparing Free TRAM

With DIEP reconstruction, during the first 24-72 hours your nurse will assess the blood flow to the flap either through a handheld Doppler machine or by listening to the flow of the internal Doppler wires. For the first 24 hours after surgery, you are kept from eating or drinking anything in case you need to go back to the operating room to fix problems with the blood supply to your flap.

As more time goes by, the nurse will check the flap circulation less and less. You will most likely be discharged four days after your surgery. Additionally, you may be told to take aspirin for a few weeks after your surgery. Your surgeon will discuss this with you.

When the staff is helping you walk your first day after surgery, you will need to walk in a bent over position. This takes tension off of the abdominal incision line. Walking like this over time may cause a low back ache, which is to be expected. Remember, you will only need to walk bent over during the initial postoperative period. When allowed by your surgeon, you will begin to progressively stand upright.

Will I have dressings in place?

You may or may not have a dressing in place. Your incision is closed with absorbable sutures, which means stitches will not need to be removed later. There may also be small strips of paper adhesive over the incision called steri-strips. If these strips are used, they should remain in place until they fall off by themselves or are removed by your plastic surgery team. There may be an outer dressing that includes a white piece of telfa which is secured in place with a thin piece of clear tape called Tegaderm™. In most cases, you will not have a dressing and your incision will be closed with surgical glue.

You may shower when directed by your plastic surgeon. Dressings and/or steri-strips covering incisions are waterproof. When showering, do not allow the water jet from the shower to directly hit the dressings and/or steri-strips; let the water gently roll over your shoulders. Blot dry when you are done. Do not soak in a tub or get in a pool or hot tub until advised by your plastic surgeon.

If you have a dressing in place, your plastic surgery team will provide instructions before discharge.

Drain care

You may have multiple drains placed at the time of surgery. These are small tubes that drain any excess blood or fluid from your surgical area. You and your caregiver will be taught how to take care of your drain(s) before you go home from the hospital. Each drain is secured in place with a single small suture. When you are home, expect the drains to be uncomfortable. This is normal. Please refer to the “Surgical Drain Care” section for more instruction.

Pain control

Your pain will be controlled by oral pain medication (taken by mouth). If you need more pain medication while you are in the hospital, you may have a small button that you can push called a PCA (patient controlled analgesia) that will give you pain medication by an IV in your arm. These medications can cause nausea, so there will be other medications to help prevent this. You will be discharged home the next day with oral pain medication, antibiotics and a stool softener. If your pain is not controlled with the pain medication prescribed for you at home, please call the clinic to notify your nurse. After hours, you will be connected to the plastic surgery team on call.

Activity

You should not resume any exercise activity until the drains are removed. Do not go for long walks around the neighborhood, go shopping for hours, or perform a lot of physical activity. You want to take it easy until the drains are removed. The more exercise and activity you do, the longer you will have to keep the drains. Motion does not allow your healing skin to stick to the underlying muscle and tissue. This does not mean you must keep your arms still or remain immobile in bed. It is recommended you do normal household activities, such as your hair and preparing dinner, but it is important that you do not physically strain yourself. During this time of recovery, it may be helpful to arrange for extra help with cleaning, driving and running errands. You will not be able to drive until you no longer need and are not taking your pain medication.

Possible Complications after Abdominal Flap Surgery

Below is a list of possible complications after abdominal flap surgery. If you have any questions, please discuss with your surgeon.

INFECTION An infection is unusual after this type of surgery. Should an infection occur, treatment including antibiotics, hospitalization, or additional surgery may be necessary. Infections when a breast implant is used are harder to treat than infections in normal body tissues. If an infection does not respond to antibiotics, the breast implant may have to be removed. After the infection is treated, a new breast implant can usually be reinserted.

SCARRING All surgery leaves scars, some more visible than others. Although good wound healing after a surgical procedure is expected, abnormal scars may occur within the skin and deeper tissues. Scars may be unattractive and of different color than the surrounding skin tone. Scar appearance may also vary within the same scar. Scars may be asymmetrical (appear different on the right and left side of the body). There is the possibility of visible marks on the skin from sutures. In some cases, scars may require surgical repair or treatment.

MUSCLE AND NERVE INJURY There is the potential for injury to deeper structures including nerves, blood vessels, muscle and lungs during any surgical procedure. The potential for this to occur varies according to the type of procedure being performed. Injury to deeper structures may be temporary or permanent.

ASYMMETRY Some breast asymmetry naturally occurs in most women. Differences in breast and nipple shape, size, or symmetry may also occur after surgery. Additional surgery may be necessary to correct asymmetry after breast reconstruction.

NEED FOR FURTHER SURGERY Many things may influence the long-term result of breast reconstruction. Secondary surgery may be necessary to perform additional tightening or repositioning of the breasts.

PARTIAL OR TOTAL FLAP LOSS Partial or total loss of the flap may occur due to poor or compromised blood supply. If a partial flap loss occurs it can cause fat necrosis and skin loss. A total flap loss will require a different type of reconstruction surgery to recreate the breast mound. This happens extremely infrequently (about 1% of the time).

ABDOMINAL BULGE OR ABDOMINAL HERNIA This can occur with any abdominal flap surgery (TRAM flap or DIEP). It happens when the internal organs push through a weak spot in the abdominal wall. It can be prevented with mesh placement. Whether or not you need mesh will be determined by your plastic surgeon at the time of surgery.

Oncoplastic Reduction Surgery

When tissue is removed from a breast it does not look the same as it did before surgery. This is more likely to happen in women having partial mastectomies or large lumpectomies. This could make the breasts look asymmetrical, meaning one breast does not match the other breast.

Oncoplastic breast reduction is removal of the cancer and surrounding tissue (called a margin) along with immediate reconstruction of the breast tissue. This procedure can be done using breast lift or breast reduction techniques, rearranging the tissue at the time of the lumpectomy. A symmetry procedure (making the breasts look the same) performed to the "healthy" breast is done either after radiation or at the time of the oncoplastic reduction. At Moffitt, oncoplastic reductions and symmetry procedures are most often done at the time of a lumpectomy.

Frequently Asked Questions (FAQs) about Oncoplastic Breast Reduction:

1. ***Who is a good candidate for this procedure?***
   - Women with large breasts who need a large amount of breast tissue removed.
   - Women who want to have smaller, lifted breasts that will be symmetrical (look the same) after radiation.
   - Women with tumors in the inner aspect of their breast or directly beneath the nipple. Removing breast tissue in these areas can cause major deformities after radiation. Oncoplastic breast surgery could prevent deformities and improve cosmetic outcome.
2. ***Who is a poor candidate for this procedure?***
   - Women with small breasts.
   - Women with large area of DCIS (ductal carcinoma in situ).
   - Women with cancer in multiple areas of the breast.
   - Women with cancer behind the nipple.
   - Women who smoke.
   - Women who have poorly controlled diabetes (high blood sugar) or other health problems which could affect wound healing.
   - Women who don't want their breasts to be reduced (made smaller) in size.
   - Women who don't want more than one scar on their breast.
3. ***Do I still need to have radiation after this procedure?***
   - Yes, most people will still need radiation. Some women may wish to meet with the radiation oncologist before surgery to discuss.

4. ***Will having this procedure increase my complication rates?***
    - There are potential complications with any surgery. Both oncoplastic breast reduction and lumpectomy can cause bleeding, infection, decreased or increased nipple sensation, wound healing issues, asymmetry, cosmetic dissatisfaction, and need for further surgery.
    - With oncoplastic breast reduction, there are usually more wounds to heal. This can result in an increased risk of small wounds that can be managed.
    - With oncoplastic breast reduction, there is a decreased rate of asymmetry, and women are generally more satisfied with the final results.
    - In most cases an overnight stay in the hospital is required.
    - A surgical drain may be placed during your surgery.

5. ***Will this procedure increase my time in the operating room?***
    - Yes, reduction/lift techniques are being done on the breast cancer side and a symmetry procedure is usually also done on the non-cancer side at the time of surgery.

6. ***If I need to have chemotherapy or radiation, will this type of surgery delay these therapies?***
    - No.

7. ***Is it best to have my symmetry procedure at the same time as the lumpectomy, or at a later time?***
    - Symmetry procedures are best performed at the time of the cancer surgery. This is something you and your plastic surgeon will decide together.
    - While it is impossible to predict how each breast will respond to radiation therapy, we generally leave the cancer-affected breast slightly larger. This allows for future shrinkage with radiation therapy.

8. ***Are there any potential drawbacks with oncoplastic breast reduction surgery?***
    - There may be a need for mastectomy after oncoplastic breast surgery.
    - This happens when final pathology margins return positive for tumor (it generally takes 7-10 days for final pathology to return).
    - There is a risk of nipple loss, loss of projection of the nipple, or reduced sensation to the nipple.

9. ***What kind of scars should I expect after surgery?***
    - You will have a scar around your nipple/areolar area and possibly one straight down from the nipple. Based on how much “lift” your skin needs, you may also have a scar under your breast. This is something to discuss with your plastic surgeon.

Direct to Implant Reconstruction Surgery

While use of a tissue expander is a common first step in breast reconstruction with implants, some patients may be candidates for immediate implant placement at the time of mastectomy. This can reduce the number of office visits and surgeries needed to complete the reconstruction.

There are several factors your plastic surgeon will consider to determine if you are a good candidate for direct to implant reconstruction.

- Wanting breasts to be similar, or smaller size than the original breast.
- There must be enough healthy breast skin to cover the breast implant, with adequate blood flow to the skin.
- Comfortable with the use of acellular dermal matrix (ADM) for support, coverage, and control of the implant position, if needed.

ADM is material that comes from the deep layer of human skin called the dermis. ADM is treated to remove the human cells leaving a soft connective tissue. This is used to help with the overall shape of the breast mound and to support and control the placement of the implant.

The ADM may be placed above or below the muscle.

1. Above the muscle: The device (implant or expander) is wrapped in ADM to help keep the device in the correct anatomic position, above the pectoralis muscle.
2. Below the muscle: The plastic surgeon lifts the pectoralis muscle, allowing a pocket to be created for the device to be placed in. The muscle may be reattached (full muscle coverage) or ADM can be placed and attached to the muscle, to cover the lower portion of the device and secured to muscle in the breast fold.

What are my risks?

Your plastic surgeon will advise you of the risks and benefits of this procedure if he/she feels it may be of benefit to you. As with all procedures, there are some possible complications with this type of surgery. Your plastic surgeon will discuss each of these with you at your appointment and again on the day of your surgery.

Possible complications include:

- Infection
- Bleeding
- Scarring
- Skin loss
- Muscle and nerve injury
- Asymmetry (breasts not even)
- Malposition of the implant
- Wrinkling/rippling of the implant
- Deflation of the implant
- Fluid collection around the implant
- Capsular contracture
- The need for further surgery

INFECTION If an infection does occur, it is important it is treated immediately. Signs and symptoms of an infection include redness or heat at the surgical site, a cloudy drainage at the incision that has a bad odor, or an increase in your temperature. We want to treat any signs of infection early so there is a better chance the reconstruction can be saved. You may need to be admitted to the hospital and started on IV antibiotics through a vein in your arm. Depending on how serious the infection, you may need an additional surgery to remove your expander or implant, wash out the cavity and a new expander or implant placed. In some cases, the expander or implant may need to be removed while the infection heals and a new one placed at a later surgery.

SCARS Your plastic surgeon will use the same incision your breast surgeon used to remove the breast (mastectomy). This incision is usually diagonal and runs along the middle of the breast. You can read more about taking care of your scar in the section "Managing Your Scar."

CAPSULAR CONTRACTION Scar tissue that forms around the implant can squeeze the implant and is called capsular contraction. There are four grades of contracture (I-IV) that range from soft to hard. Your plastic surgeon may instruct you to massage your implants daily. Talk to your plastic surgeon about what he/she recommends.

FAT NECROSIS OR OIL CYST FROM FAT GRAFTING Patients will frequently develop contour abnormalities after mastectomy and reconstruction that can be minimized with fat grafting. Fat is injected after it is harvested elsewhere from the body. When the fat is injected, it fills up the skin and smoothes out contour abnormalities. It will frequently result in small nodules under the skin that can be felt. These can be fat lobules, fat necrosis, or oil cysts. Typically, they are not visible, but can be felt. Many women after a diagnosis of breast cancer are obviously very concerned about any small mass that can be felt under the skin. If this nodule is in an area where fat was injected, it can be monitored by the patient and the doctor. If the nodule changes or is in an area where no fat grafting took place, an ultrasound may be ordered. This is a very effective test to determine if the nodule is consistent with fat necrosis, an oil cyst, or possibly something that needs further workup such as a biopsy.

How long will I be in surgery?

Your surgery may take one to two hours if you are having one breast reconstructed and four hours when both breasts are reconstructed. You will then go the recovery room and a member of the plastic surgery team will talk to your family. After about 30 minutes to an hour in the recovery room, you will be transferred to an observation bed.

How long will I be in the hospital?

Most patients are in the hospital overnight and go home the next day. You should expect to be out of bed and sitting in a chair that evening. You may also be asked to get up and walk around.

How long will it take for me to recover from the surgery?

Some women require six weeks and others only require two. We advise patients to take six weeks off work after surgery. It is not possible to determine ahead of time how the surgery will affect you. One week after your surgery, you will see your plastic surgery team to evaluate your recovery.

Will I have dressings in place?

You may or may not have a dressing in place. Your incision is closed with absorbable sutures, which means stitches will not need to be removed later. There may also be small strips of paper adhesive over the incision called steri-strips. If these strips are used, they should remain in place until they fall off by themselves or are removed by your plastic surgery team. There may be an outer dressing that includes a white piece of telfa which is secured in place with a thin piece of clear tape called Tegaderm™. In most cases, you will not have a dressing and your incision will be closed with surgical glue.

You may shower when directed by your plastic surgeon. Dressings and/or steri-strips covering incisions are waterproof. When showering, do not allow the water jet from the shower to directly hit the dressings and/or steri-strips; let the water gently roll over your shoulders. Blot dry when you are done. Do not soak in a tub or get in a pool or hot tub until advised by your plastic surgeon.

If you have a dressing in place, your plastic surgery team will provide instructions before discharge.

Drain Care

You may have multiple drains placed at the time of surgery. These are small tubes that drain any excess blood or fluid from your surgical area. You and your caregiver will be taught how to take care of your drain(s) before you go home from the hospital. Each drain is secured in place with a single small suture. When you are home, expect the drains to be uncomfortable. This is normal. Please refer to the "Surgical Drain Care" section for more instruction.

Pain Control

Your pain will be controlled by oral pain medication (taken by mouth). You will be discharged home the next day with oral pain medication, a stool softener and antibiotics. If your pain is not controlled with the pain medication prescribed for you at home, please call the clinic to notify your nurse. After hours, you will be connected to the plastic surgery team on call.

Activity

You should not resume any exercise activity until the drains are removed. Do not go for long walks around the neighborhood, go shopping for hours, or perform a lot of physical activity. You want to take it easy until the drains are removed. The more exercise and activity you do, the longer you will have to keep the drains. Motion does not allow your healing skin to stick to the underlying muscle and tissue. We recommend you do not raise your arms above your head for two weeks or until your plastic surgeon allows you to do so. This does not mean you must keep your arms still or remain immobile in bed. It is recommended you do normal household activities, but it is important that you do not physically strain yourself. During this time of recovery, it may be helpful to arrange for extra help with cleaning, driving and running errands. You will not be able to drive until you no longer need and are not taking your pain medication.

1.3 Nipple Sparing Mastectomy

Nipple sparing mastectomy is a mastectomy in which all the breast tissue is removed without removing the nipple or the pigmented skin around the nipple, which is called the areola. In a traditional mastectomy, the nipple and areola are removed. **Only a few women are candidates for nipple sparing mastectomy. This option will be determined by both your breast and plastic surgeons.**

An ideal candidate may include, but is not limited to:

1. Women with small breasts.
2. Not actively smoking.
3. Low BMI (body mass index).
4. Absence of significant breast drooping (ptosis).

You may NOT be a candidate for nipple sparing mastectomy if:

1. You have had radiation treatment.
2. You are an active smoker.
3. The size of your breasts are too large.
4. You have a significant amount of drooping of your breasts (ptosis).
5. High BMI (body mass index greater than 35).

Your breast team will determine if you are a candidate for a nipple sparing mastectomy.

Reconstruction in women having nipple sparing mastectomies:

Women having a nipple sparing mastectomy are generally candidates for immediate breast reconstruction with either implant reconstruction or using their own body tissue. Implant reconstruction with a nipple sparing mastectomy can occur as either a one or two surgical process.

- The one-surgical process does not require the need to expand the chest skin and muscle. Women who select this option must be relatively small breasted with a small amount of droop of the nipple. Additionally, the reconstructed breast will be about the same size as your native breast and may still require future revisions.

- The two-surgical process involves placing expanders first to stretch the chest skin and muscle over time followed by a second surgery to exchange the expanders for permanent implants.

Important things to consider about nipple sparing mastectomy:

While this procedure has become more common and patients generally have improved cosmetic outcomes, it is important to mention some of the possible risks associated with this type of surgery:

- **NIPPLE NECROSIS** The blood supply to the nipple and areola is weak after a nipple sparing mastectomy. Blood carries oxygen. If the nipple does not receive enough oxygen because of the weak blood supply to the nipple, necrosis (tissue death) of the nipple can occur. This happens in 3% to 20% of cases. There are many reasons why this happens, including choice of incision, breast size (there is an increased risk in larger breasts) and how well the breast tissue is removed from behind the nipple and areola. Sometimes necrosis happens to only the most superficial layers of the skin and complete healing occurs within a few weeks.
  If loss of the nipple does occur, nipple reconstruction is an option.
- **LOSS OF NIPPLE SENSATION** Most likely, the nipple will have little to no sensation.
- **NIPPLE POSITION** Controlling the nipple position can be difficult as tissue scars down and heals. While plastic surgeons do their best to control the position of the nipple during the reconstructive process, it is not always easy to have the nipples heal in a perfect and symmetrical position. Patients who naturally have nipples in different or odd positions may not be good candidates for this procedure.

Revision and Secondary Breast Reconstruction

2.1 Liposuction and Fat Grafting

During this procedure, fat is removed from the abdomen, thighs, back, or arms and grafted into the breasts for better contour and more aesthetic results. This procedure uses a suction technique to remove the fat from specific areas of the body and graft or place it into the breasts. Liposuction can also be used to debulk flaps.

This procedure is performed by inserting a cannula through a small incision (less than one centimeter) made in the skin some distance from the donor area. Fluid is then injected to facilitate the process of removing the fat cells. The cannula is moved back and forth to remove the fat that is within the deeper layers of the body.

After fat is removed from the donor site (usually abdomen, inner thighs) it is processed, placed into syringes, and is then injected into the recipient side (breast). Usually, fat grafting to the breast is used to improve small indentations, increase fullness and assist in creating symmetry.

Liposuction is not a weight loss procedure but more of a contour improvement procedure for the donor side. It is also not used to reconstruct the breast but to assist with smaller fillings after the breast is reconstructed with different techniques.

After the procedure, the breasts and fat donor sites may have bruising which the body will absorb. Any discoloration will fade away with time. Dressings and compression garments may be applied. Please contact your team about how long you may need to have a dressing or wear a compression garment.

There can be complications with this procedure, including reabsorption of the fat, contour irregularities, lumpy breasts, asymmetry, dimples, depressions, waving, unwanted scars, bleeding, hematoma, seroma, or infection. These may appear right away after the procedure is done or in the following weeks postoperatively when the swelling has decreased.

Call your surgeon immediately if you are experiencing possible signs of infection (redness, fever, drainage), bleeding, hematoma, or you have any concerns.

2.2 Scar Revision

Scar revision can reduce the appearance of scarring from breast procedures. It helps make the scar less noticeable and more cosmetically appealing. It does not completely erase the scar but helps minimize a poorly healed scar.

Scars can result from too much tension placed on the skin of the breast. After breast procedures, tension on the breast should be supported by the underlying tissue and not the skin of the breast itself.

The procedure involves removing the original scar and a small amount of surrounding skin. The breast tissue is then repositioned before securing it by draping the skin over the underlying tissue rather than pulling it tight which can cause scarring.

After surgery, you will have an area of raised skin along the incision, but this will dissolve over time and result in minimal scarring. The initial recovery phase lasts up to two weeks. Healing will continue for several weeks as the new surgical area heals. We recommend avoiding any strenuous activity until your doctor allows you to do so.

2.3 Nipple Reconstruction

Nipple reconstruction is done approximately two to three months after your breast reconstruction and is done in the outpatient area. Timing of this procedure is determined by your plastic surgeon. Proper timing is important because it can take two to three months for your breast/implant to finalize its shape. If the nipples are placed too soon after the reconstruction, location of the nipples may look displaced or crooked. The technique for creating nipples can be done numerous ways and the best method for you will be decided by discussing it with your plastic surgeon.

The nipple projection, or how far your nipple sticks out, will be about 50% larger than you are expecting at the time of the reconstruction. This is because we know the projection will shrink by at least 50% over the first several weeks. At the time of your six week follow-up, you will have a better idea of the final size of your nipple.

The projection can always be made smaller by a simple procedure in clinic or in the surgical procedure room (as determined by the surgeon). This is typically done about six months after the nipple reconstruction. Making the projection larger is more difficult, which is why the nipples are made larger to begin with.

Time taken off work will be minimal and varies depending on the type of nipple reconstruction that is performed. Nipple reconstruction can be done in either a special procedure room or in the main operating room. The room used varies with the type of reconstruction chosen and whether there is a need for any other breast adjustments.

Dressings

The type of dressing you have after nipple reconstruction will depend on your plastic surgeon's preference. The dressing may be in place anywhere from one to eight weeks. You will receive specific instructions from your plastic surgery team at your appointment on how to care for your dressing.

Pain Control

You will go home with prescriptions for pain medication. Please take them as directed by your doctor or team. If your pain is not being controlled on what has been recommended for you, please call your plastic surgery team.

2.4 Nipple-Areola Tattooing

If one or both of your nipples was removed during your surgery, or if you have had breast reconstruction with an implant or tissue flap, you may be a candidate for nipple tattooing. Nipple tattoos are similar to a regular tattoo because it is permanent and applied with needles that insert pigment into the skin, but it is different because the tattoo artist is working with compromised skin.

You may not be a candidate if:

- Your breast skin has been damaged by radiation treatment.
- Your breast skin is very thin.
- You have lymphedema affecting your chest.
- You have a history of breast tissue infection.
- You have an active breast tissue infection.
- You are still undergoing chemotherapy.

If you are a candidate for nipple tattooing, plastic surgeons usually recommend waiting at least three months after breast reconstruction surgery to undergo nipple tattooing. This gives your breast tissue time to heal. Your plastic surgeon will determine if this procedure is right for you.

Is nipple tattooing painful? The nipple area is normally numb after surgery because nerves have been cut during the surgical procedure. If there is any remaining sensation, the tattoo artist will apply a numbing cream before doing the tattoo.

After the tattoo is complete, your tattoo artist will give you specific instructions for caring for the site. A clear bandage is usually applied and left on for one week. Most nipple tattoos take five to seven days to heal but could take longer.

Risks of nipple-areola tattooing include:

- Infection
- Scar formation
- Allergic reaction to the pigment in the tattoo

These permanent nipple tattoos are performed by Moffitt-approved tattoo artists.
Your nurse has a complete list of tattoo artists in this area.

If nipple tattooing is not covered by insurance or if your co-pay is significant, you may wish to explore other options with your plastic surgery team.

Breast Imaging for Reconstruction

3.1 CTA (Computerized Tomography Angiography)

Computed tomography angiography is a specialized CT scan that combines a CT scan with an injection of a special dye to produce images of blood vessels and tissues in a specific part of your body. The dye is injected through an IV (intravenous) line into your vein.

This test can provide detailed pictures of the blood vessels that are involved in your breast reconstruction. It can detect blockages, aneurysms, and narrowing in your blood vessels.

Risks with this procedure:

- You are exposed to a small amount of radiation.
- Allergic reaction to the dye.
- Infection or bleeding at the site of the dye injection.

You are not sedated for this procedure.

You will stay in the hospital for four to six hours after the procedure is completed.

You may feel a little tired after the procedure.

3.2 Laser Angiography

This imaging procedure allows surgeons to visualize blood flow in tissues used for breast reconstruction. It is useful in identifying inadequate tissue perfusion (blood flow) during and after reconstructive procedures. This can reduce complications related to poor blood supply.

Laser angiography utilizes laser generated, near infrared light along with Indocyanine Green (ICG) as the imaging agent. The laser light source illuminates the surgical field with white light and low intensity, invisible, infrared light, causing the ICG to fluoresce or light up.

A contrast material is injected through an IV line into your vein and a TV monitor shows images of breast tissue and blood vessels.

It is a beneficial tool for intraoperative perfusion assessment (delivery of blood to a specific site) and postoperative assessment of blood flow in reconstructive surgery.

Preparing for Surgery and What to Expect

4.1 Tips for Your Surgery

Suggestions to prepare for your upcoming surgery

- Ask for information necessary to best prepare you for your surgery and plan ahead for your recovery. Having clear expectations of recovery time and needs will help reduce fear, frustration, and disappointment if setbacks or delays occur.

- Communicate your needs to your medical team. Every patient is an individual and you know yourself best. Information about your unique needs can be helpful to your team in making decisions about your care during your hospital stay.

- Ask for help and support from family, friends, and others. Accept that you will have limitations and will likely need some assistance when you return home – most patients do.

- Consider talking with your social worker or other healthcare professional or attending a support group. Having someone who cares and will listen to you can be very helpful. Social workers are members of your medical team and will assist you and your family with tools to cope with your emotions, information about resources for support, and plan for your discharge following surgery.

- Get spiritual support through prayer, meditation, or whatever spiritual practice serves as a source of comfort for you. If you prefer to speak with a chaplain or someone in Chaplaincy Care, please call 813-745-2856.

What happens before surgery?

- You will be scheduled for an appointment with a member of the anesthesia team in Pre-Anesthesia Testing (PAT). The appointment may be a scheduled telephone call, or you may be asked to come in to meet with an advanced practice team member.

- The purpose of this appointment is to make sure you are as healthy and as prepared for your surgery as possible.
  - Information needed by the PAT staff include previous surgeries, a complete list of all prescription medications, vitamins, supplements and over-the-counter medications you are taking; results from any cardiac testing (ECG, Echo, Stress test, Pacemaker/AICD card); name of your cardiologist or pulmonologist; and recent blood work reports for any testing done outside of Moffitt. Your PAT team will provide detailed instructions about what is needed before your surgery.

- **After surgery you will need to have a responsible adult drive you home.** To ensure your safety, you must have a caregiver available for up to 24 hours after you have received anesthesia. This includes your first postoperative night at home (for same day discharge). If necessary, you may be kept overnight for observation or admitted to the hospital after surgery. Your doctor will discuss this with you.

- If you become sick near the scheduled surgical date, please contact the surgery coordinator right away so that your surgery appointment may be rescheduled if necessary.

If you take blood thinners (Coumadin®/warfarin, Plavix®/clopidogrel, Lovenox®/enoxaparin, Fragmin®/dalteparin, Xarelto®/rivaroxaban, Arixtra®/fondaparinux, or prescribed aspirin) **please verify with the ordering doctor when you should stop these medications**. You may be given a form for the ordering doctor to fill out, so we know what the recommendation is. Please make sure we get that completed form returned to us before surgery.

The night before your surgery

Please refer to "NPO Guidelines for Patients" or follow your doctor's specific instructions about when to stop eating and drinking before your procedure.

4.2 Pre-Surgery Checklist

- ☐ Stop diet pills 30 days before surgery. Tell your doctor if you are taking any diet pills.
- ☐ Remember to take your blood pressure medications the morning of surgery.
- ☐ Stop all herbal medications two weeks before surgery.
- ☐ Stop smoking (this includes nicotine patches and gum). If you need assistance, Moffitt offers a Patient Tobacco Treatment Program with a wide range of services available to help you quit smoking. For more information, call 813-745-8811 or e-mail TobaccoTreatment@Moffitt.org.
- ☐ We recommend you discontinue alcohol two weeks before surgery.
- ☐ Please be aware that we ask you to stop all aspirin or aspirin-like products seven to 10 days prior to your surgery. This includes ibuprofen and Aleve®, Advil® or Motrin®. If you are on Coumadin (warfarin) or other blood thinners, please consult your prescribing doctor about discontinuing prior to surgery.
- ☐ You may continue to take Tylenol® (acetaminophen).
- ☐ We ask you stop taking Vitamin E, herbal supplements, and green tea seven to 10 days before your surgery.
- ☐ Do not wear hairpins or makeup on the day of surgery
- ☐ Please keep any of your valuables, especially jewelry, at home and do not wear jewelry to the hospital.

MRSA Preoperative Screening

Prior to your surgery, you will be screened for MRSA (Methicillin-Resistant Staphylococcus Aureus). MRSA is a common resistant germ found in the nose or on the skin that is resistant to antibiotics commonly used to treat it.

It is important for your surgeon and healthcare providers to know if you are carrying MRSA. In order to do this, samples will be collected to test for MRSA. This is done by swabbing the inside of your nose with a cotton swab. Occasionally, additional samples may be collected throughout your treatment. Knowing whether you, or others, are carrying MRSA will help prevent the further spread of this germ.

You will be contacted in three to four days if your test is positive for MRSA. If you are found to carry MRSA, you will be given a prescription and instructions on how to decrease the amount of this germ on your skin before your surgery. Specific instructions are explained in the handout "MRSA Testing and De-Colonization Before Surgery."

If you test positive for MRSA, you will be on contact precautions while in the hospital. This means that healthcare staff will be wearing gloves and gowns while caring for you to help prevent the spread of MRSA. Contact precautions are described in the handout "Contact Precautions."

Please ask your doctor or nurse if you have any questions or concerns regarding this information.

4.3 Day of Surgery

- If you wear contact lenses or eyeglasses, you will be asked to remove them and put them in a safe place.
- If you wear dentures, you will be asked to remove them and place them in a special container. One will be provided to you if needed.
- All patients are required to wear surgical caps in the operating suite. One will be provided to you on your day of surgery.
- Approximately 30 to 60 minutes before you are taken to surgery, you may be given medication to help you relax. Be sure to use the bathroom before taking this medication. If you receive this medication before the surgery begins, try to lie quietly and relax. You should not get out of bed after receiving this medication.
- If you use an inhaler, you may be asked to bring it with you the day of your surgery. It will be labeled with your name and given to the anesthesiologist who may give you a dose sometime during the surgery process. The inhaler will be given back to you in the recovery room.

What happens during the surgery?

On the day of your surgery, you will be registered and taken to the surgical holding area along with one caregiver or family member (your caregiver or family member can stay with you until you are taken into the operating room). Please check with your surgical team as these guidelines may change.

When you are in the surgical holding area, you will meet with an anesthesiologist as well as a nurse anesthetist. They will review your chart and your medical history with you. Before you receive any medication, you will also meet with your surgeon. They will again explain the surgical procedure(s) to be performed as well as any risks involved with the procedure. It is very important to ask any questions you may have at this time. You will then be asked to sign a patient consent form stating you give the surgeon and/or their assistant your permission to carry out the procedure.

Once this has taken place, you will be assisted into a gown and onto a stretcher. An IV will be started and any surgical site markings will be made. When the surgical team is ready for you, two of the team members will come with a stretcher and take you to the operating room.

After you arrive in the operating room and before your surgery begins, the anesthesiologist will explain the type of anesthesia you will receive.

Staff trained in every aspect of surgical care will attend to you while you are in the operating room. A tube called a Foley catheter may be placed in your bladder to drain urine and a sequential compression device or SCDs will be placed on your legs to prevent the formation of blood clots.

Once your surgery is completed, you will be moved to the recovery room until the effects of the anesthesia wear off. A member of the recovery team will be with you at all times, watching you closely and frequently checking your recovery progress. In an effort to assure the comfort, safety and privacy of all patients, visitors are limited in the recovery room area. We understand that surgery is a difficult time for patients and loved ones. Protecting our patients' well-being and privacy is a priority.

While in the recovery room, you may receive oxygen and additional fluids through your IV. The length of time each person is in the recovery room varies, but it is usually anywhere from 30 to 90 minutes.

When you are recovered from the immediate postoperative effects of the anesthesia, a recovery room nurse will take you to your room or will assist you with the discharge process if you are going home the same day as your surgery. Rarely will you be required to stay in the recovery room for longer than expected.

If you are spending the night in the hospital, you will be transported to your room as soon as a bed is available. Your loved ones will be notified of your room number and location to wait for your arrival. Your pain and nausea will be controlled, and staff will make every effort to keep you as comfortable as possible during the time you are in the recovery room. Your primary nurse will be waiting to help transfer you from the stretcher to your bed and help you settle in.

What can my family expect when I am in surgery?

During the time you are in surgery, your loved ones may check in at the volunteer desk in the surgical waiting area. If they decide to leave the waiting room and visit the cafeteria or go for a walk, they should leave a cell phone number or request a pager at the volunteer desk. This allows us to reach them if they are not in the waiting room.

The best way for your loved ones to keep track of your progress through surgery is by the tracking board in the surgery waiting room. This board gives up-to-date information on your progress. An update will be provided to your loved ones by a member of the surgical team after surgery.

What can I expect after surgery?

You will probably still be sleeping when you return to your room. The nursing staff will keep a close watch over you. You may or may not experience the following: sore throat, bleeding on your dressing, pain, nausea, or vomiting. Should you experience any of these symptoms, please notify your nurse. You will be offered something to eat and drink if your doctor feels you are ready.

Other things you may experience after surgery:

- You will be asked to move your legs and wiggle your feet and toes often to improve the blood circulating in your legs. Your nurse will remind you.
- Some patients are given elastic hose to wear to help blood circulation in the legs. You may still have on the compression boots from surgery. These will be removed as you become more awake and active.
- Your nurse will instruct you on the use of an Incentive Spirometer.
- No matter how good you may feel, it is important to call a nurse to help you the first time you get out of bed. Continue to ask for assistance until you are sure you feel strong enough to stand and walk on your own.

You are likely to experience some discomfort after your surgery. The amount will vary from patient to patient and with the type of surgery performed. Your doctor will leave orders for pain medication with your nurse. Please tell your nurse as soon as you begin to have pain, as it is easier to control if medication is given before the pain becomes severe.

4.4 Risk Factors Contributing to Surgical Complications

Identifying risk factors that contribute to poor surgical outcomes can help minimize complications after surgery. Some common risk factors that may cause surgical complications are:

- Excess weight
- Smoking and use of tobacco products
- Alcohol Use
- Drug Use

Having these risk factors before surgery can lead to poor wound healing, surgical infection, and delayed wound healing.

Exercise and weight management

Studies show that cancer survivors who control their weight with a healthy diet and regular exercise can improve their long-term health and decrease their risk of cancer recurrence.

- Exercise can also improve bone density and boost self-esteem!
- Aim for at least 30 minutes of exercise five days a week.

Smoking and use of tobacco products

- The longer you are nicotine-free the better. Even being smoke-free 24 hours before surgery can lower your risk of surgical complications.
- **Do not use tobacco products the day of surgery.** It only takes a few seconds for cigarette smoke to fill your lungs and 24 hours for your body to begin to get rid of the effects!
- Your body will recover from surgery faster, there is a lower risk of infection after surgery, including pneumonia and respiratory failure and surgical wounds heal faster with less risk of infection.
- Moffitt's Tobacco Treatment Program is here for you. Quitting tobacco products is not easy. In addition, smokers with cancer often have problems with depression, anxiety, and stress. This can make it more difficult for you to quit smoking or to start smoking again if you have tried to quit. Remember, you learned to smoke and it took practice. It takes practice to quit. The Tobacco Treatment Program will work with you to find healthy ways to cope.
- We are here for you. Moffitt's Tobacco Treatment Program can be reached at TobaccoTreatment@Moffitt.org or please call 813-745-8811.

Alcohol

Alcohol intake may contribute to negative health outcomes. Drinking too much alcohol has been linked to cirrhosis of the liver and liver cancer. According to the Dietary Guidelines for Americans:

- If you choose to drink alcohol, it is recommended that women limit alcohol to one drink daily and men to two drinks daily.

Drug use

Do not use any illegal, recreational drugs (including cocaine or marijuana) 24 hours before surgery. Use of these drugs can affect your immune system which means surgical wounds heal slower and are at higher risk of post-surgical infection.

Use of drugs before surgery can also affect the anesthesia you receive. You can become overly sedated and more difficult to wake up after surgery. Your surgeon may cancel your surgery if you are actively using recreational drugs.

4.5 Medications and Herbals

Before your surgery

- Stop taking aspirin, or any medications that contain aspirin, and Vitamin E 10 days before your surgery or as directed by your doctor.

- If you take aspirin due to a heart condition or you have had a stroke, please talk with your doctor before you stop taking any medication.

- Stop taking NSAIDs seven to 10 days before your surgery or as directed by your doctor.

Herbal supplements

- Dietary supplements are vitamins, minerals, herbs, amino acids, or enzymes that come in powder, pill, or liquid form. Examples include multi-vitamins, turmeric capsules and fish oil. Some over-the-counter dietary and herbal supplements have been found to contain prescription strength anti-inflammatory drugs, stimulants, anti-anxiety medications, heavy metal contaminants and high levels of bacteria.

- Even helpful products can be harmful in some situations such as when you have a chronic disease, are about to have surgery, or are receiving chemotherapy or radiation. Some supplements might be fine on their own but interact with certain prescription drugs or other supplements. You should inform your doctor about any over-the-counter products you are taking or intend to take.

One week before your surgery, you must stop taking any herbals or other dietary supplements because they can:

- Increase your risk of bleeding by thinning your blood.
- Raise or lower your blood pressure.
- Interact with other medications.
- Increase the effects of anesthesia or sedation.

Common herbs to avoid before surgery

This information does not contain all possible herbs and their side effects. Please speak with your healthcare team if you have any questions about the herbs or dietary supplements you are taking. For more information on herbs and dietary supplements, please visit the National Institutes of Health at https://nccih.nih.gov/health/supplements.

NAME	POSSIBLE DANGERS
Echinacea	Can cause rash or difficulty breathing.
Garlic	Can lower blood pressure. Can increase your risk of bleeding.
Gingko (Gingko biloba)	Can increase your risk of bleeding.
Ginseng	Acts as a stimulant. This decreases the effects of anesthesia or sedation. Can increase your risk of bleeding. Lowers blood sugar levels.
Turmeric	Can make chemotherapy less effective.
St. John's Wart	Can interact with medications given during surgery. Can make skin more sensitive to radiation treatment.
Valerian	Can increase the effects of anesthesia or sedation.
Herbal Formulas	Many herbal formulas contain herbs whose side effects are unknown. You must stop taking these products one week before surgery.

SECTION 5

Care After Surgery: Optimizing Your Results

5.1 What To Expect After Surgery

Healing and recovery times vary for each person.

Please remember you are unique and your experience after surgery may be different. Below are a few general statements of what you can expect.

- You will feel tired and sore for approximately two to four weeks. It is important to listen to your body and take the time you need to heal and recover.
- Reconstructed breasts do not have the same feeling and sensation as natural breasts. Normal sensation to the breast cannot be restored. In time, some feeling may return.
- This surgery will produce some scars. Most scars will fade substantially over time. It may take one to two years.
- To help with managing your scar(s), your surgeon or nurse will discuss scar massage methods with you.
- If you are only having one breast reconstructed, there will be a difference in the reconstructed breast and your natural breast. The reconstructed breast may feel firmer and look flatter or rounder than your natural breast.

5.2 Instructions When You Go Home

- Your postoperative visit is approximately one to two weeks after surgery. This appointment is made for you before you leave the hospital. Call the Patient Care Hotline at 813-745-8000 (available 24/7) to reach a member of your healthcare team if you are not sure of the appointment day and time. There will be other follow-up appointments scheduled as needed.
- You may have one or more surgical drains. You will be given instructions on the care of these drains and how to record your drainage while in the hospital. Record output at 8:00 a.m. and 8:00 p.m. The drains will be removed in one to three weeks. The drain(s) must have less than 30 milliliters (1 ounce) of fluid per day for two days. If the drains are still not ready to be removed at three weeks, they must be checked by your plastic surgeon.
- You will need someone to drive you home after your surgery and help you at home for the first one to two days, depending on your type of reconstruction.
- Get plenty of rest.
- Eat a balanced diet.

- Decreased activity, pain medications, and anesthesia may cause constipation. Try to increase your fiber intake and fluids, especially water. Continue to take the stool softener prescribed by your doctor. If you still do not have a bowel movement after two to three days, call your doctor.
- Take pain medications and antibiotics as prescribed. Resume all home medications unless otherwise instructed by your doctor.
- Continue to avoid alcohol after surgery. This is especially important while you are taking pain medications.
- Absolutely no smoking or use of tobacco products! This can delay healing and increase your risk of complications.

Activity

- Start walking as soon as possible. Avoid lifting anything heavier than a gallon of milk.
- Do not drive while you are taking narcotic pain medication. You may resume driving once you are no longer taking narcotic pain medication.

When to call the nurse

- Increased redness along the incision or increased swelling or bruising of the breast(s).
- Swelling and redness or streaking that persists after a few days.
- The breast has a change in temperature or feels hot to the touch.
- Increased or severe pain, not relieved by pain medication.
- Any side effects of your medications such as rash, nausea, headache or vomiting.
- Temperature greater than 101.5°F, with or without chills.
- New or increased drainage around the incision (especially if there is a foul odor).
- Bleeding from the incision not relieved by light pressure.
- Any loss of feeling or motion.

Contact information

- Please call the Patient Care Hotline at 813-745-8000 (available 24/7) to reach your plastic surgery nurse or a member of your healthcare team.
- After breast reconstruction, please ask for your plastic surgery team first. They will address concerns about surgical drains, wound care, antibiotic therapy and pain medications.

5.3 Surgical Drain Care

The surgical drain(s) removes excess fluid the body produces as a result of surgery. The fluid is a mixture of lymphatic fluid, blood cells and debris. Healing can occur more efficiently by removing the fluid. The amount of fluid collected by the drain is related to the extent of the surgical procedure. This means, the more active you are, the more fluid will be produced. The color of the fluid first looks cranberry (blood-tinged) and eventually becomes pink or yellow. Sometimes increased activity can cause the color of the fluid to become cranberry after it has been yellow.

It is important to keep the drain tubing open. This is done by “stripping” the tubing and emptying the bulb three to four times each day for the first three days only. We have provided a document (see JP Drain Record) to help you keep track of the drainage. When you are at home expect the drains to be uncomfortable. This is normal.

The drain cannot be removed until it is emptying 30 milliliters (1 ounce) or less for two days in a row or advised by your plastic surgeon. It is important to keep this area clean. When showering, it is also OK for the water to hit directly on the drainage tubes coming out of your skin. Use soap and water or Hibiclens® to clean the drain at the insertion site. Do not use Hibiclens® directly on your incision site. Dry off with a clean towel.

You should not resume any exercise activity until your drain is removed. Do not go for long walks around the block or shopping for hours. You want to take it easy until the drains are removed. The more exercise and activity you are involved in, the longer the drains will be in, because the motion will not allow the skin to adhere to the underlying muscle and tissue. This does not mean to keep your arms still and remain immobile in bed. You can do normal household activities such as comb your hair, prepare dinner, but do not strain yourself by doing activities such as vacuuming or heavy lifting.

Potential problems with the drain

Whenever something is placed in the body, there is a possibility of infection. If you develop a fever or chills, call your doctor right away. Signs and symptoms of an infection are redness that increases at the drain site, heat at the drain site, cloudy fluid, fluid that has a bad odor and an increase in your temperature. It is common for fluid to drain around the site. Sometimes this happens if the body makes more fluid than can be drained. Call the Breast Clinic at (813) 745-8000 if no fluid is being collected in the bulb or if you think fluid is collecting around the drain site under your skin.

Procedure

Wash hands thoroughly before caring for your drain. To strip the drain, follow these steps:

1. Hold the site where the drain exits your body with your hand on the opposite side of your body. This can prevent pulling on the drain site. Place the tubing between your forefinger and your thumb. You may use an alcohol wipe to hold the tubing.
2. Begin where the tube exits your body and gently strip the tubing, moving the fluid and any clots toward the bulb.
3. Repeat the procedure at least three to four times each day. The bulb should always be compressed for it to work properly.
4. Empty the bulb to keep it free of fluid, which can cause heaviness and unnecessary pulling. Do not touch the inside of the cap. Each time you empty the bulb, measure the amount of fluid, and write this down on the JP Drain Record. Do this each time you strip the drain tubing.
5. Every 24 hours, add up the total amount of drainage and record on your JP Drain Record. Bring this with you to your clinic appointments.

Surgical Drain

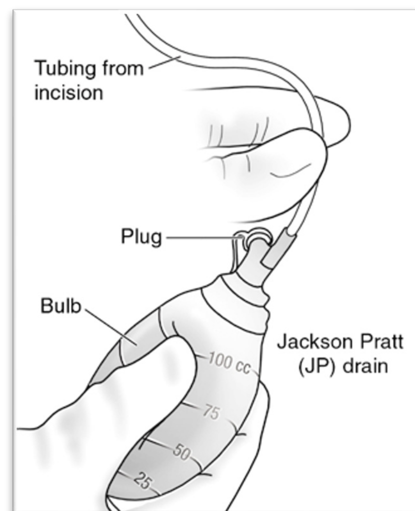


Illustration by Susan Gilbert, LLC

Drain removal

- The drain is removed by the nurse or doctor at your first postoperative visit provided the amount of fluid is 30 milliliters (1 ounce) or less for two days in a row OR it is left in up to three weeks after surgery, whichever comes first. Call the Breast Clinic at (813) 745-8000 for an appointment when the drain is ready to be removed (if not removed at the first postoperative visit).
- It is OK to shower. The site will close by itself within three to four days.
- Fluid may continue to ooze from the drain site until the site heals. The body will now absorb the fluid it is producing. If the body cannot absorb the fluid it produces fast enough, the fluid will begin to collect in and around the drain site. This is called a seroma and requires medical attention. If this begins to happen, call the Breast Clinic as soon as possible.

To help with the healing process, keep the site as clean and dry as possible.

Please bring your JP Drain Record Sheet with you to your clinic appointments until your drain(s) is/are removed.

5.4 Managing Your Scar

Scars result when the body repairs skin wounds caused by surgery, accident, or disease. They are the natural result of the healing process. The longer it takes a wound to heal and the more damaged the skin, the greater the chance of a noticeable scar.

The location on the body as well as your age and skin type will affect the way a scar forms. Older skin tends to scar less visibly whereas younger skin tends to over-heal resulting in larger and thicker scars. Scar formation and scar maturation are ongoing processes. Scars continue to grow and change throughout the recovery process which may take from 12 to 18 months. Scar massage is an effective way to decrease scar tissue build up and help make scars less noticeable. Massage will not help soften a scar older than two years.

What Is scar massage?

Scar massage is one method of softening and flattening scars. It serves several important functions:

- Promotes collagen remodeling by applying pressure to scars.
- Helps decrease itching.
- Provides moisture and flexibility to the scar.

When should I start massaging my scars?

You should start massaging your scars two weeks after surgery. Wait until the sutures have been removed and all scabs have fallen off by themselves. Do not pull off any scabs.

How do I perform scar massage?

Use the pads or soft tips of your fingers to massage the scar and tissue around the scar. Massage in all three directions.

CIRCLES: Using two fingers make small circles over the length of the scar and the skin surrounding it.

VERTICAL: Using two fingers massage the scar up-and-down.

HORIZONTAL: Using two fingers massage the scar from side-to-side.

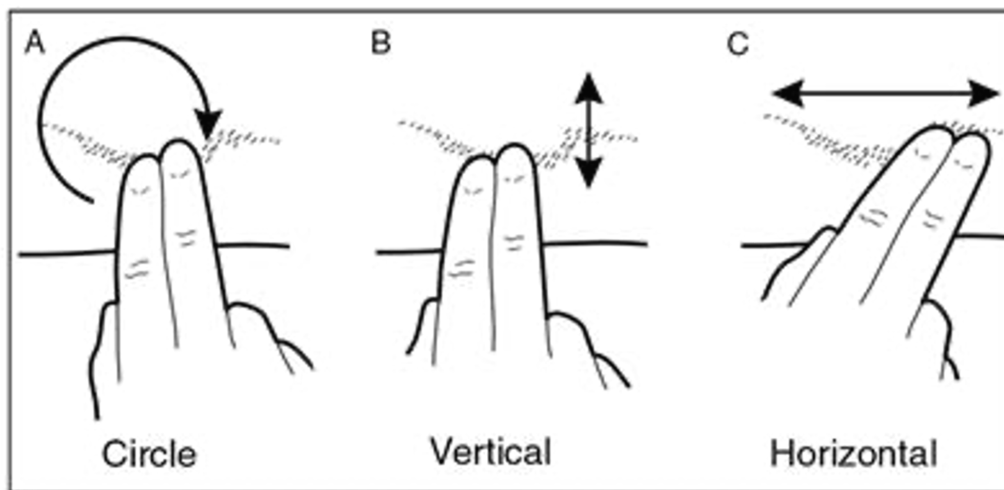


Illustration by Susan Gilbert, LLC

How much pressure do I apply?

You should apply as much pressure as you can tolerate. Begin with light pressure and progress to deeper and firmer pressure as you go. Apply enough pressure to make the scar area lighten in color or turn white.

How often should I massage my scar?

Massage should be done two to three times daily for 10 minutes each time.

How long is massaging necessary?

You should massage your scars as instructed for at least six months following your surgery or injury. Massaging for more than six months will not hurt your scars and may actually prove beneficial.

When should I stop massaging?

Stop massaging and contact your doctor if you experience any of the following:

- Redness
- Bleeding
- Scar feels warmer than the skin around it
- More pain than usual at the site of the scar

What else should I know about scars?

While your scars are healing, you should avoid sun exposure. Sun exposure may cause your scars to hyper pigment or turn darker than the surrounding skin. You should use sun block with an SPF (sun protection factor), of 35 or greater and wear protective clothing at all times. Keep your scars away from the sun for at least one year following your surgery.

What lotion should I use?

- Use any unscented moisturizing lotion that will keep your skin soft and supple.
- Do not use heavily perfumed lotions.

Examples of lotions or products you may want to use:

Silicone Strips worn 12 hours every day for six months
Silicone Scar Gel
Arbonne®
Eucerin®
Nivea®
Aveeno®
Mederma®

5.5 Implant Massage

Breast implants are soft and pliable when they are inserted; however, your immune system knows when a foreign object, such as an implant, has been put into your tissues. When a foreign object is detected, a protective capsule of scar tissue naturally forms around it. Over time the capsule may thicken and contract, squeezing your implant. This is called a contracture. A contracture can cause a change in position, shape or feel of the implant and may also cause discomfort. In order to prevent scar tissue formation and contracture of the implant capsule, your plastic surgeon may recommend that you massage your breast implants ***after initial healing is complete*** and continue for the life of the implant.

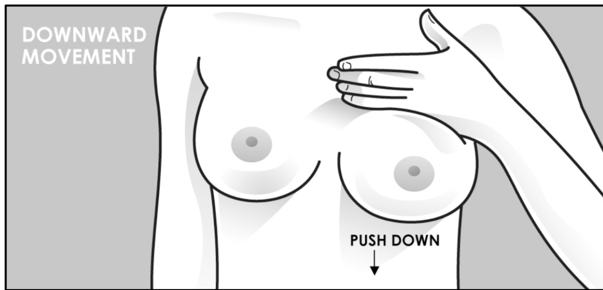
Implants do not last a lifetime. Depending on your age and other factors, you will likely need your implants exchanged at some point in your life. Massage after breast implants helps to move them into place, keep them soft, and reduce the rate of implant hardening known as capsular contracture.

When and how should I start massaging my breast implants?

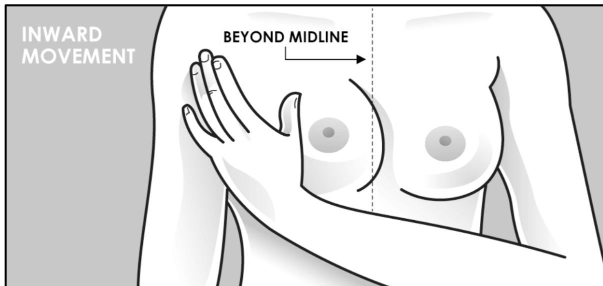
You will be instructed on when to start the massage by your nurse or surgeon. This is usually about four to six weeks after surgery. Breast implant massage should be done twice a day, for about five minutes each time. Ideally it should be done daily for the life of the implant to delay the need for further surgery.

The implant will need to be pushed up and down and from side to side (see diagrams below). Firm pressure must be used to properly move the implant around. Using firm pressure will not damage the breast implants.

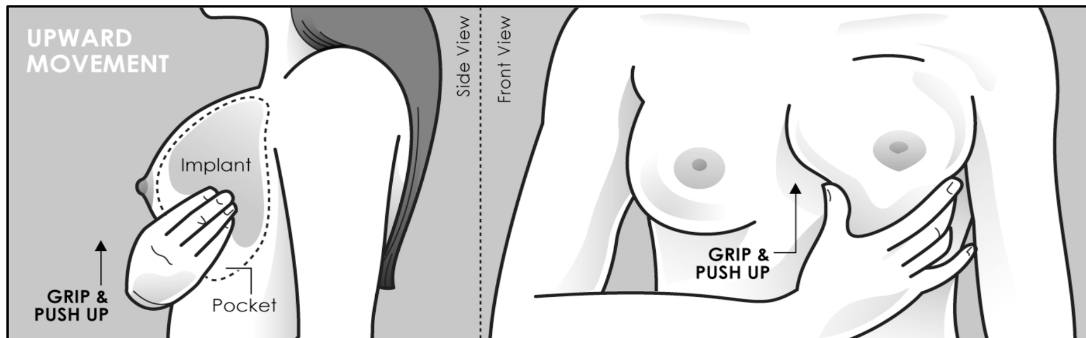
Hold your implant in each of the following positions for a few seconds unless instructed otherwise by your surgeon.



DOWNWARD MASSAGE:
Downward massage helps to stretch out the pectoral (chest) muscle. This allows the implant to settle into a more natural position.



INWARD MASSAGE:
Massaging/pushing implants towards each other helps to stretch out muscle fibers that may be holding the implants too far apart.



Illustrations by Teresanne Cossetta Russell.

UPWARD MASSAGE: Upward massage pushes implants upwards to help stretch out the implant capsule.

Nutrition

We all know that nutrition is important for optimal health, but did you know it also plays an important role in healing and recovery after surgery? In fact, proper nutrition before and after your breast reconstruction promotes wound healing, increases energy and strength and decreases the risk of infection. This means shorter hospital stays, faster recovery time and less risk for surgical complications. A healthy diet includes lean protein foods at every meal, five servings of fruits or vegetables, plenty of whole grains and adequate hydration. Eating mostly whole foods, found in the perimeter aisles of the grocery store, will ensure your body is getting the nutrients it needs to function at its best. Minimize your intake of processed foods which have higher amounts of pro-inflammatory fat, sugar and salt and less fiber and vitamins than whole foods.

Add protein to every meal

Protein is essential for wound healing, repair of tissues and supporting the immune system. The best way to ensure you are getting enough protein is to include a high protein food at every meal and snack. When selecting a protein food, choose lean, high quality sources of lean meats, seafood, eggs, low fat dairy (cheese, milk, yogurt), nuts, seeds, beans, legumes, tofu and grains such as quinoa. These foods are also excellent sources of zinc which is needed to heal wounds and incisions. Most diets provide adequate amounts of protein, including well-planned, vegetarian diets that include a variety and abundance of plant proteins. Strict vegans may benefit from meeting with a dietitian before surgery to ensure they are getting adequate protein each day.

Get plenty of whole fruits, vegetables, and whole grains

Rich in vitamins, minerals and antioxidants, these foods work together to promote healing, prevent infection and rebuild blood and fluid lost during surgery. Purchase them in their whole food form as processing can reduce the amount of nutrients in the food. Deep-colored fruits have high amounts of antioxidants. These plant foods contain Vitamin A (such as orange and green vegetables) and Vitamin C (such as citrus fruits and berries) which help repair tissues and support the body's immune system. Pairing fruits and vegetables with whole grains provides fuel for muscles and fiber to prevent constipation.

Stay hydrated

It is very important to drink enough fluids during the weeks before and after your surgery. Adequate hydration promotes healing, keeps the immune system strong and relieves symptoms of nausea, fatigue, constipation and pain. If you are feeling thirsty, you are likely already dehydrated and need to drink up!

Most people need at least six to eight cups (two quarts) of fluid each day to stay well hydrated. You may need even more fluids if you are physically active or spend a lot of time outside in the heat. Tracking your fluid intake in the weeks before and after your surgery can help to ensure you are drinking enough. Any fluid (except alcohol) counts; however, it is best to limit your intake of sugar sweetened or caffeinated drinks which are not as hydrating as water. In the case of an abdominal flap reconstruction, you may need to avoid caffeine for two months as it can cause blood vessel constriction and reduce blood flow to the flap.

Use caution with dietary supplements

Unless prescribed by a physician, most people do not need any type of supplement before surgery. In fact, dietary supplements can be harmful in some situations and are typically not recommended prior to and after surgery. Unlike drugs, the government does not regulate dietary supplements for quality, safety, or effectiveness, which means there can be unexpected side effects. For example, supplements have been known to increase bleeding by thinning the blood, cause changes in blood pressure and interact with medications used for pain or anesthesia.

Some supplements are necessary but try to get your nutrients from food first. Bring your bottles of dietary supplements, along with your medications to your pre-anesthesia appointment. You will receive instructions from the anesthesia staff regarding which vitamins, minerals or herbal supplements you can and cannot take before your surgery.

Maintain a healthy weight

If you have too much body fat, you may be asked to lose weight prior to surgery to help you heal better and improve your surgical outcomes. If you also have diabetes, you may need to lose weight and control your blood sugars before surgery to minimize the risk of surgical complications. Weight loss is not easy, but it is possible through eating a balanced diet, reducing portion sizes and engaging in physical activity. Moffitt provides nutrition services by registered dietitians who can help you achieve your goals for weight loss.

Develop a pre-surgical diet plan

People who go into surgery better nourished have better outcomes. You can help yourself by doing a bit of a nutritional boot camp before your surgery and begin healthy eating.

✔ Take the time to create a menu and prepare at least one week's worth of meals that can be frozen. This will ensure you have the foods you need to maintain your healthy eating after surgery while you recover.

✔ Go grocery shopping the week before surgery or send someone with a list to shop for you. Buy whole foods. Most processed foods have greater amounts of fat, sugar and salt and far less fiber and vitamins than whole foods.

✔ Fill your pantry and refrigerator with essential items such as the following energizing, nutrient-packed foods: canned beans, olive oil, fresh and frozen fruits and vegetables, nut butters, whole grain crackers, fruit bars, low fat cheese, low fat yogurt, skim milk, or plant-milks.

✔ Make sure cups and dishes are at an easy level to reach. Store them in bottom cabinets or on your kitchen counter to limit having to lift your arms above your head.

Establish a post-surgical diet plan

Getting adequate nutrition after surgery may be a challenge, especially if you experience symptoms of nausea, fatigue, pain, or constipation after your surgery.

✔ Focus on smaller portions of nutrient dense foods, eating often throughout the day.

✔ Aim to include a high protein food, fruit or vegetable and water at every meal.

✔ Try fermented dairy, like kefir and yogurt to restore the normal healthy bacteria to your body.

✔ Ask for and accept help from family and friends. Accept that you will have some limitations and will likely need some assistance with grocery shopping and cooking. Let friends organize meal help and have a meal sign-up and delivery while you recover.

✔ If you lost your appetite, consider buying an unflavored protein powder that can be added to food or drinks.

✔ You may find it easier to eat four to six mini-meals rather than three larger ones.

Try these quick and easy mini-meals:

- Whole grain toast and nut butter
- Fruit smoothie with yogurt, berries and ice
- Turkey and vegetable whole wheat wrap
- Banana with nut butter skim milkshake
- Tuna or chicken with light mayonnaise on whole grain crackers
- Celery with peanut butter or soft cheese
- Light or low-fat cheese with whole grain crackers
- Whole grain bread with avocado or low-fat cheese
- Whole grain English muffin pizza
- Hummus with carrots and bell peppers
- String cheese and grapes
- Nuts and dried fruit
- Small salad with nuts and low-fat cheese
- Carrot or zucchini muffins

Support After Breast Reconstructive Surgery

7.1 Wellness and Healing Services

Moffitt Cancer Center's Integrative Medicine Program offers many healing and wellness services and integrates safe and effective complementary therapies with conventional treatments to improve the quality of life for our patients during and after cancer treatment. Our services include:

- **Massage Therapy** Therapeutic massage can reduce physical pain as well as lower stress and anxiety and can be beneficial for cancer patients who are currently undergoing treatment, in recovery or in remission.
- **Acupuncture** This ancient Chinese practice involves the insertion of fine needles at strategic points throughout the body to improve blood flow and stimulate the central nervous system. Acupuncture is known to reduce pain and anxiety, as well as minimize some cancer treatment side effects, like nausea and vomiting.
- **Yoga** Our program offers gentle, restorative yoga, which involves the use of chairs and props. This type of yoga is mild enough to practice during cancer treatment and can be helpful for managing stress and anxiety, as well as increasing energy.
- **Meditation** Designed to improve emotional well-being, meditation emphasizes relaxation and calming the mind by focusing attention on breathing or on particular words or phrases.

For more information, please call the Integrative Medicine Program at 813-745-6052 or email PatientWellness@Moffitt.org.

7.2 Sexuality and Breast Reconstruction Surgery

Many women describe their breasts as an important part of their sexuality and sense of self. After treatment for breast cancer many women have difficulty engaging in sexual activity and physical intimacy. Some women describe having difficulty adjusting to changes in their bodies and in their physical appearance. Many women feel less attractive after breast surgery; often they fear their spouse or partner will find them less desirable sexually. These feelings are normal. Treatment can, and often does, affect a woman's sexuality.

Frequently, women respond to these feelings by avoiding touch, by withdrawing emotionally and physically from their partners. A partner may be confused by this, unsure of how to approach their partner or are afraid of hurting or pressuring their partner after breast cancer.

Many women believe that breast reconstruction will resolve their feelings, help them adjust to the changes in their bodies and solve problems in their relationship. It takes time to heal both physically and emotionally after breast reconstruction. Here are some things to keep in mind while you consider breast reconstruction and while you are healing from your surgery:

- Open communication and honesty, with yourself and your partner, are key to addressing concerns about your sexuality after breast reconstruction.
- It's important not to assume how your partner feels about you or the changes to your body.
- Breast reconstruction will not resolve problems in a relationship that may have existed before a diagnosis of breast cancer.
- You may feel your body has betrayed you. Be gentle with yourself.
- After breast reconstruction, if you are not engaging in what you consider sexual activity, be affectionate with each other. Begin reconnecting physically with your partner by spending time together, touching, hugging and experiencing pleasurable touch.
- Keep an open mind about exploring new and different ways to be sexual with yourself and with your partner. Explore ways to stimulate and enhance sexual feelings.

Talk to your healthcare team if you have questions or concerns about sexual activity after breast reconstruction.

7.3 Insurance Coverage for Breast Reconstruction Surgery

In most cases, the Federal Women's Health and Cancer Rights Act of 1998 requires that insurance companies pay for breast reconstruction for women who have undergone a mastectomy. In some cases, an insurance company may not pay for breast reconstruction. Make sure that you are informed about your insurance company's policies for coverage.

Check with your state insurance commissioner's office or your health insurance provider to find out which services are covered by your state's laws and your health plan.

For more information on coverage of breast cancer related services by state, visit the National Cancer Institute's State Cancer Legislative Database's website or the American Society of Plastic Surgeon's website.

If you are employed and need forms completed for your employer, please see one of our Disability Specialists. The Disability Office can be reached at 813-745-2356.

7.4 Role of the Caregiver

As a caregiver, it is just as important for you to be informed about the patient's procedure and recovery as it is for the patient. Moffitt embraces the principles of patient and family centered care, which is an approach to care that encourages the partnership of patients, family members and health care providers. You as a caregiver, whether related by blood or not, are welcome to be with your loved one during clinic visits and hospital stays unless hospital guidelines change due to unforeseen circumstances. You are an important part of their care and recovery.

In order to provide the best care to your loved one, it is also important for you to stay physically and emotionally healthy. This section was written specifically for caregivers to help you take care of your loved one, as well as yourself.

Understanding the emotional needs of your loved one

Where there is a diagnosis of cancer, worry and fear are usually not far behind. These emotions can be a constant companion especially in the early days of diagnosis.

Understanding the emotional needs of the patient can be very hard for you as the caregiver. You may feel helpless and overwhelmed, especially if your loved one is depressed. It is important at these times to just listen. There may be few answers, but most patients are not asking for answers from their caregivers. They appreciate the "safe place" their caregiver may provide just by listening.

Time is an important factor in the healing process. Returning to normal may take more time than you had hoped, or it may not return at all. If this happens, a new normal will have to be established. Be patient, your loved one may simply need more time to adjust.

It is also important to recognize not everyone copes with the stress of illness and treatment in the same way. If you are concerned that your loved one is not coping, please talk to a member of the healthcare team. There are clinical social workers on staff at Moffitt who can assist.

Understanding your emotional needs

As the caregiver, you can help your loved one cope with their emotions, but it is important to realize you are also impacted. Caregivers may focus their energy on the patient and neglect their own needs and concerns. Feelings of being overwhelmed, frustrated, guilty, angry and sad are common emotions caregivers may experience. It is normal to feel positive and negative emotions when taking care of someone as they recover. If you have questions about the emotions you are feeling, please talk to someone on your loved one's medical team, such as the social worker.

Grieving the loss of a breast

Surgery, effects of anesthesia and the fear related to a cancer diagnosis can be exhausting. Some patients may need a little more time to recover and feel like themselves again.

For many women it is necessary to take some time to grieve the loss of one or both breasts. This may be difficult for the caregiver to understand. For the caregiver, the removal of the breast with reconstruction may be a huge relief the cancer is gone. The patient may need time to adjust to this way of thinking. Life has been turned upside down and patients and family members need time to process all that has happened. You may find that you and your loved one are processing this at different speeds. Remember, this takes a different amount of time for everyone involved.

In the event the patient does not seem to be recovering emotionally from surgery, a psychosocial evaluation may be necessary. The initial assessment may be done by a clinical social worker at Moffitt.

Relationship changes

Adjustment and change are constant themes throughout the cancer experience. This is also true in relationships. Some patients who have been very independent may now have the very difficult task of asking for assistance. Some caregivers struggle with not knowing what to do to be helpful. It is important to acknowledge everyone's feelings and reactions at this time.

Keeping the lines of communication open is a key factor during this process. Patients and caregivers are usually interested in knowing what the other needs, both physically and emotionally. When patients and caregivers can state their needs clearly and directly, it makes it easier to know how to help. This strengthens your bond and helps reduce the feeling that you are going through this alone. "Checking in" with all members of the family can help ensure everyone's needs are being addressed. Clinically trained social workers at Moffitt can help with opening the lines of communication with children and families.

Additionally, you should keep the lines of communication open with your loved one's healthcare team. As the caregiver, you are an important member of the healthcare team. Your observations and insights are helpful during the recovery process. If you have questions about what is a normal or abnormal recovery, ask. Talking with the healthcare team about your concerns and asking for help can reduce the stress and burden of caregiving.

You may also find it helpful to meet and talk with other caregivers. Moffitt offers Family & Friends Support Group once a week which allows caregivers the opportunity to share experiences. If you'd like to learn more about this support group, please talk to your loved one's social worker or call (813) 745-8407.

Taking care of yourself as a caregiver

The National Family Caregivers Association offers suggestions as to how caregivers can better advocate for themselves. Some things are beyond the control of a caregiver. There are, however, choices caregivers can make to improve their emotional and physical health.

- It is very important to be aware of your strengths and limitations.
- Establish clear boundaries as to what you can and cannot do.
- Learn to say “no” and when to ask for help.
- Once you recognize your strengths and limitations, choose to communicate these in a way that is clear to others.
- Take charge of your own well-being. Choose to care about your health, both emotionally and physically.
- Choose to plan for the future by addressing the need for a legal decision maker if needed. Advanced planning avoids the need to make critical decisions in a crisis situation.
- Gather Information. As a caregiver, you are often an extra set of eyes and ears for the patient.
- Choose to learn. The more information you have, the more confident you will be in your caregiver role.

Resources

8.1 Glossary

Asymmetry: When two breasts do not match in shape or size.

Breast Reconstruction: A breast implant or the women's own tissue is used to rebuild the shape of the breast after a mastectomy.

CTA: A specialized CT scan that can produce images of blood vessels and tissue using an injected dye.

Capsular Contracture: When scar tissue forms around the implant, it tightens and squeezes the implant.

Delayed Reconstruction: Reconstruction done at a later date following breast cancer surgery.

DIEP (deep inferior epigastric artery perforator) Flap: A type of flap procedure that uses fat and skin from the same area as in the TRAM flap but does not use the muscle to form the breast mound. This is microscopic surgery to join the blood vessels in the flap to the blood vessel on the chest.

Direct to Implant: Replaces the loss of the breast at the time of mastectomy in a single surgery by placing a fully filled implant and bypassing tissue expander implants.

Fat Grafting: Uses liposuction to remove fat from other areas of the body. The fat is then injected into the breasts using small incisions.

Free TRAM: The tissue for reconstruction is moved entirely from another area of the body and the blood and nerve supplies are surgically reattached with special microscopes.

Immediate Reconstruction: Reconstruction done at the same time as the mastectomy.

Laser Angiography: This imaging procedure allows surgeons to visualize blood flow in vessels.

Latissimus Dorsi Flap: This procedure tunnels muscle, fat, and skin from the upper back to the chest to create a breast mound.

Mastectomy: The removal of the entire breast; not including the muscles.

Necrosis: Cell and tissue death from lack of blood supply to the tissue.

Nipple Sparing Mastectomy: The removal of all the breast tissue without removing the nipple or the pigmented skin around the nipple (areola).

Oncoplastic Breast Reduction: Removing the cancer and surrounding tissue along with immediate reconstruction of the breast tissue.

Pedicle Flap: Tissue that is surgically removed, but the blood vessels remain attached and are tunneled from the original site to the area where the tissue is to be attached.

Prosthesis: Man-made body part to substitute for one that has been removed, such as an external breast form to fill out a bra cup.

Radiation Therapy: The treatment of cancer using high-energy rays or particles to kill or shrink cancer cells. After a lumpectomy, radiation therapy is used to destroy any cancer cells left behind after surgery.

Saline Implant: Has a silicone shell and is filled with sterile salt water (saline).

Scar Revision: Surgery that reduces the appearance of scarring from past breast procedures.

Sequential Compression Device (SCDs): A device placed on your legs while you are in bed in the hospital as a measure to prevent the formation of blood clots.

Symmetry: When two breasts match in shape and size.

Tissue Expander: A balloon-like material placed beneath the skin and the chest muscle. It is inflated with saline over a period of time until there is enough room to add an implant in place of the natural breast. The tissue expander is placed during a second reconstructive surgery.

TRAM (transverse rectus abdominis muscle) Flap: A procedure that uses tissue and muscle from the lower tummy wall to reconstruct a breast mound. It can be a pedicle (left attached to its base and then tunneled) or free flap (cut free from its base and transplanted to the chest).

Tumor Margin: The distance between the tumor and the edge of the surrounding healthy tissue.

8.2 Recommended Online Resources

American Cancer Society

Discusses different breast reconstruction types with a photo gallery of women and their stories about their reconstruction experiences (search "breast cancer"). The American Cancer Society (ACS) site has a section specifically for caregivers. Type "Caregivers" in the search box.
https://www.cancer.org/

Aphrodite Reborn Women's Stories of Hope, Courage and Cancer

By Dr. Loren Eskenazi. A copy is also available in Moffitt's Patient Library and Welcome Center. A copy can be purchased from Amazon.

Breast Reconstruction American Society of Plastic Surgeons

Website includes a before and after photo gallery of breast reconstruction.
https://www.plasticsurgery.org/Reconstructive-Procedures

Cancer Care

Cancer care offers free support, information and financial assistance to cancer patients and their caregivers. They provide telephone counseling and caregiver support groups, teleconferences, and podcasts of educational workshops.
http://www.cancercare.org

Facing Our Risk of Cancer Empowered

Offers a password protected photo gallery of real women to share their experience and a discussion board open to anyone.
www.facingourrisk.org/photogallery

Living Beyond Breast Cancer

Offers resources, information, and community support for people impacted by breast cancer.
https://www.lbbc.org/

Lotsa Helping Hands

Create a free, private Community web site to organize family and friends during times of need. Use the calendar in your private Community to match volunteers to needed tasks. Send announcements to keep everyone up to date. Tap into resources from leading caregiver and health organizations.
http://www.lotsahelpinghands.com

NCCN Guidelines

Provides patient-friendly versions of the NCCN clinical practice guidelines for breast cancer.
https://www.nccn.org/patientresources

Young Survival Coalition

Offers dialogues by women about reconstruction in an open bulletin board.
YSC also offers a helpful list of Question and Answers about breast reconstruction.
https://www.youngsurvival.org

Notes

Notes

JP Drain Record

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:
Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:
Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:
Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:
Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:
Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

5 milliliter (ml) = 1 teaspoon
10 ml = 2 teaspoons
15 ml = 3 teaspoons or 1 Tablespoon
30 ml = 6 teaspoons or 2 Tablespoons or 1 ounce

JP Drain Record

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

Date:	Drain #1	Drain #2	Drain #3	Drain #4
Morning				
Noon				
Evening				
	Total:	Total:	Total:	Total:

5 milliliter (ml) = 1 teaspoon
10 ml = 2 teaspoons
15 ml = 3 teaspoons or 1 Tablespoon
30 ml = 6 teaspoons or 2 Tablespoons or 1 ounce

12902 USF Magnolia Drive, Tampa, FL 33612-9416
1-888-MOFFITT | MOFFITT.org

Produced by the Breast Plastic Surgery Program and the Patient Education Department.
H. LEE MOFFITT CANCER CENTER AND RESEARCH INSTITUTE, INC. All rights reserved 2014. Updated 2022.