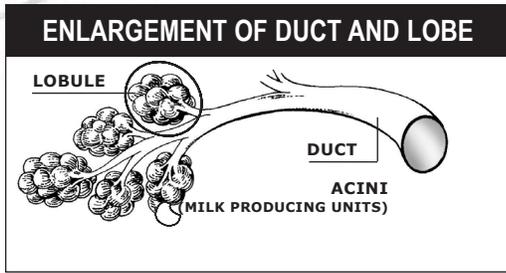
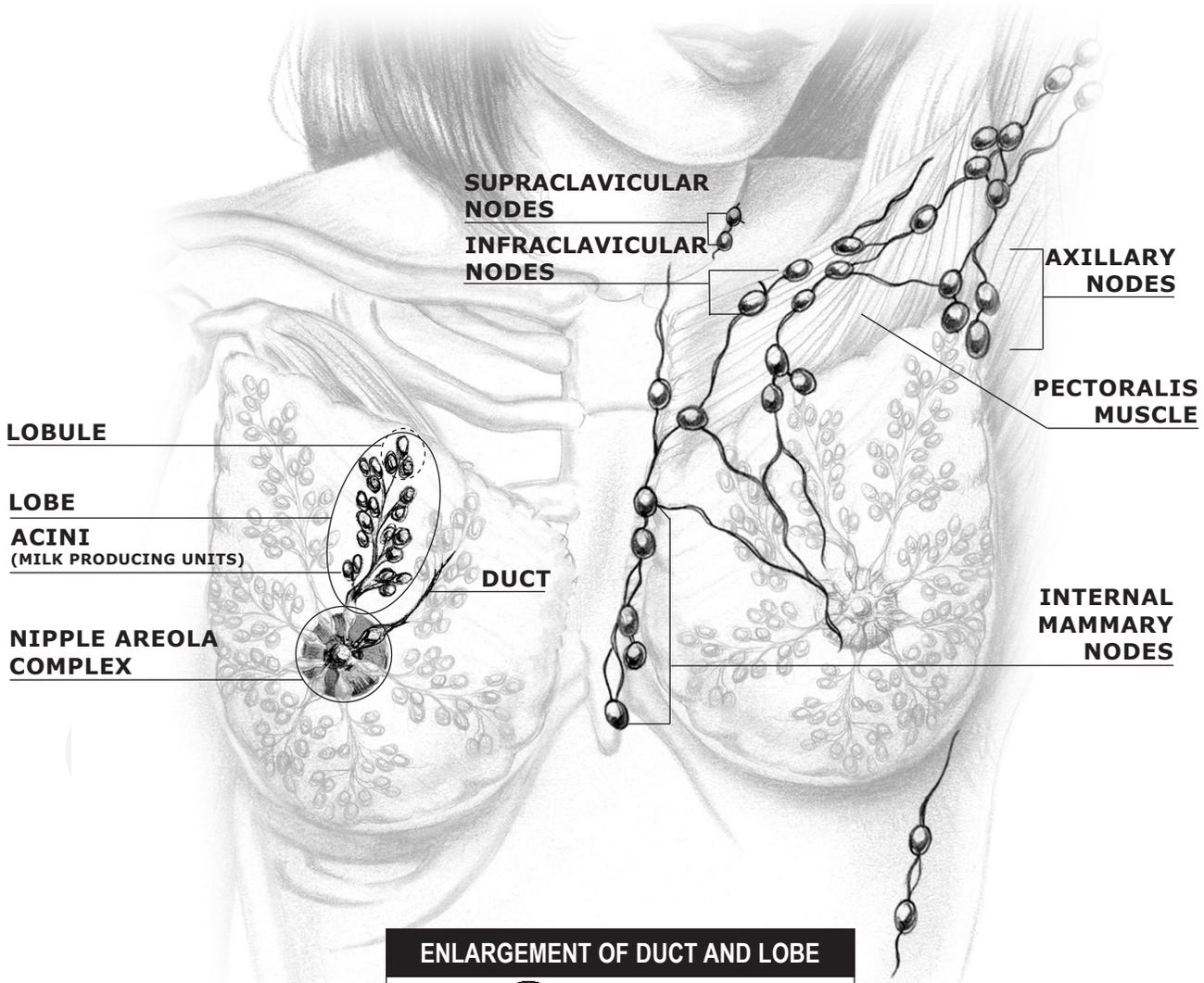


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Breast Anatomy

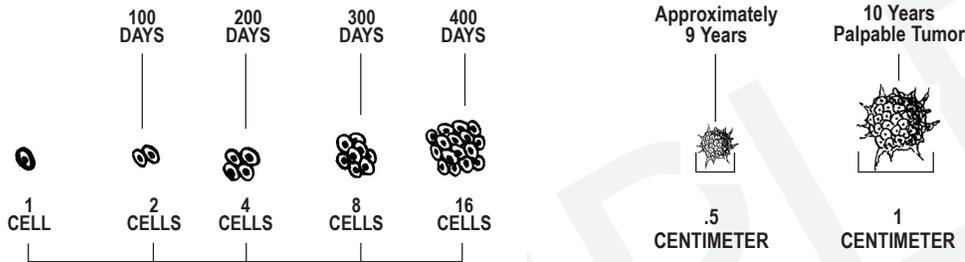


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Cancer Growth Rate

Cancer begins when a cell undergoes an abnormal conversion or damage that allows the cell to continue to reproduce itself. The growth process is an exponential process where the cell doubles in size with each cell division from one abnormal cell to two, then two to four, then four to eight, then eight to sixteen, etc. The growth process varies in individuals and in different types of cancer.



Some cancers grow rapidly, while others grow very slowly. Breast cancers have been shown to double in size every 23 to 209 days. A tumor which doubles every 100 days (the estimated average doubling time) would have been in your body approximately eight to ten years when it reaches about one centimeter in size (3/8 inch) – the size of the tip of your smallest finger. By the time a one centimeter tumor is found, the tumor has already grown from one cell to approximately 100 billion cells.

Determining Tumor Growth Rate

The percentage of cancer cells that are actively dividing in a cancerous tumor is called the proliferation rate. During the pathology evaluation of a tumor, the pathologist commonly uses the Ki-67 test to reveal the growth rate of the removed tumor. In general, the higher the proliferation rate, the more aggressive a tumor tends to be.



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Chemotherapy Central Line: Central Intravenous Port Surgery

Patient Name _____

Date _____ **Time** _____

Facility _____

Facility Location _____

Surgeon _____

Preoperative Instructions _____

Commonly Called: PORT-A-CATH®, LifePort®, Vascular Access Devices

A **central intravenous** (into a vein) catheter (tubing), with a metal access is a device implanted under the skin. It is often referred to as a port or a vascular access device, and is used to deliver medications, blood products and to draw blood. Many of the chemotherapy products are irritating (causing burning or pain) to small veins, but are tolerated without irritation if given through a larger vessel. Some people have very small or fragile veins that are difficult to locate. These veins can become irritated when they are repeatedly used to administer chemotherapy. To eliminate these problems, a central intravenous port may be recommended by a physician.

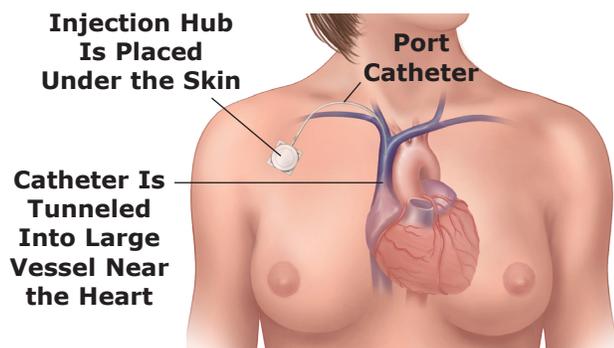
The port offers an effective route for the administration of needed therapy without the side effects of irritation to vessels or the inability to find a suitable vein in the arm. Blood samples for blood studies can also be drawn from this port, eliminating the repeated arm or finger stick. A central port frees the arms and hands during treatment.

Physicians May Recommend a Central Intravenous Port for the Following Reasons:

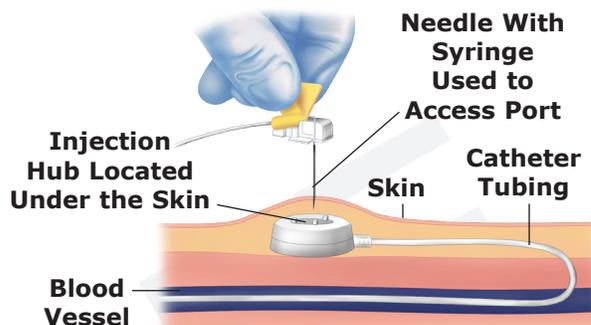
- Frequent need for giving medications or drawing blood using a vein
- Treatment period to last over several months
- Continuous infusion chemotherapy to be given
- Home infusion of chemotherapy needed
- Irritating drugs (vesicants) are to be given
- Small veins that are hard to find and require multiple sticks on each visit
- Venous access limited to one arm
- Two drugs need to be given at one time (double lumen catheter used)
- Patient prefers a port rather than having frequent arm sticks

The port is placed under the skin, usually on the chest wall, by a surgeon in a hospital or clinic. Local anesthesia (not general) will be injected into the area because the patient must be able to hold her breath on command, be placed in a position where her head is lower than the rest of her body and follow directions in regard to head positioning and turning. Therefore, general anesthesia is not used. The physician usually administers medication for relaxation. The procedure is uncomfortable but not painful.

A catheter will be inserted into a large vessel, usually the large vessel under your collarbone, and through to the area right above your heart. A small incision will be made on your chest to insert the access port to the catheter under your skin. The port and catheter are both under the skin. A small lump from the port is visible on your chest. When therapy is needed, a nurse or physician will access the port by inserting a needle into the rubber portion of the port. When therapy is not in progress, the needle will be removed and medication to prevent clotting will be inserted into the port.



Port may be placed on either side of chest. Port is located under the skin.



Port is accessed with a needle for treatments. When I.V. needle is removed, it seals itself.

Because the port is under the skin, there are no restrictions as to bathing, nor are there any care procedures for the port. A nurse or physician administers all care of the port. The port may be left in place until the physician determines you will no longer need any treatment.

Signs That Need to Be Reported to Physician Include:

- Fever over 100.5° F
- Pain in area of port or shoulder
- Any redness or local swelling in area of port
- Any generalized swelling on side of chest where port is located
- Any burning sensations when medications are infusing
- Any drainage in the area of the port insertion



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Autologous Reconstruction

Breast reconstruction using a woman's own body tissues (autologous) has many advantages, even with increased surgical complexity.

Advantages of Autologous Reconstruction Compared to Implants:

- Avoids many complications relating to future surgical procedures for revision or replacement of implant
- Autologous tissues feel more like normal breast tissue, unless a woman is extremely thin
- Normal ptosis (drooping of breast) and inframammary crease (where the wire in an under-wire bra would be positioned) can be better matched by surgeon
- Surgeon can add additional skin flaps to avoid having to stretch skin if mastectomy scar is tight
- Post-surgical deformities or irregularities can be corrected with additional autologous tissues
- Donor sites (abdomen or hips) can have improvement in contour with reduction of body fat
- Lower cost over time because of fewer future complications and surgical revisions
- Volume and shape of autologous tissues follow body weight changes
- Return of breast sensation is possible with certain types of reconstruction in about fifty percent of women
- Breast feels warm when touched
- Provides solution for partial mastectomies or wide lumpectomies because of flexibility of tissues
- Preferred reconstruction if radiation therapy is to be part of cancer treatment

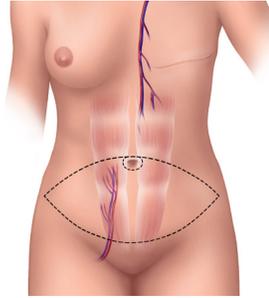
Disadvantages of Autologous Reconstruction Compared to Implants:

- Requires sacrificing another body part to reconstruct your breast
- Additional time required for surgery
- Increases recovery time
- Increases pain after surgery
- Increases potential for tissue necrosis (cell death) of reconstructed breast from lack of blood supply to newly transplanted tissues requiring removal and total loss of transplanted body part (After surgery, you will be closely monitored for adequate blood supply to the newly transplanted tissues to detect any problems early and prevent loss of tissues.)
- Increases weakness in abdomen may limit physical activities and increase risk of hernia/bulge if abdominal muscles are used for reconstruction

Autologous Tissue Retrieval Sites and Reconstruction Types

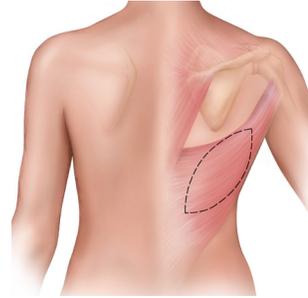
Abdomen:

1. TRAM (Transverse Rectus Abdominis Myocutaneous muscle)
2. DIEP (Deep Inferior Epigastric Perforator)



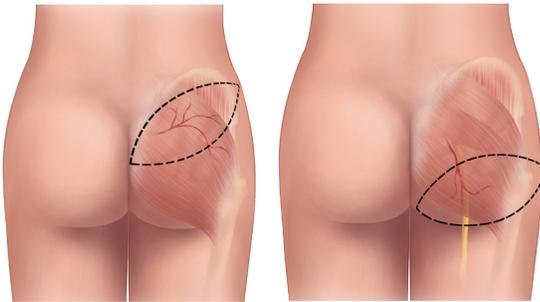
Back:

1. LD (Latissimus Dorsi)
2. TAP (Thoracodorsal Artery Perforator)



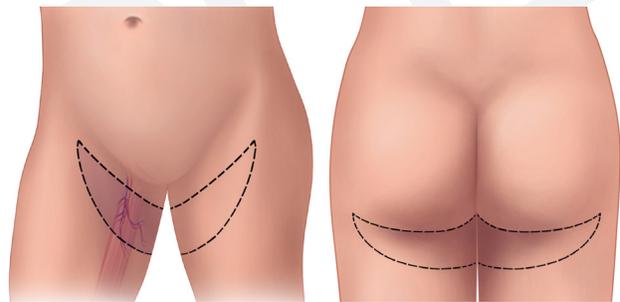
Buttock:

1. IGAP (Inferior Gluteal Artery Perforator)
2. SGAP (Superior Gluteal Artery Perforator)



Thigh:

1. TUG (Transverse Upper Gracilis)
2. PAP (Profunda Artery Perforator)



Additional Instructions:



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Nausea and Vomiting Management

Learning to manage nausea and vomiting during treatment may present a challenge. Even though much progress has been made in antiemetic medications, a small percentage of patients still struggle with the problem. Women often think that they should learn to tolerate the nausea and vomiting as an expected part of treatment. However, it is better to understand the particular characteristics of nausea or vomiting, learn what promotes the problem, what can be done to prevent or treat it and how to effectively communicate the characteristics of your experience with your physicians. Nausea and vomiting warrant serious attention because the condition can cause fluid and electrolyte imbalances, cause weight loss and greatly diminish the quality of the patient's life.

Understanding Nausea and Vomiting

Nausea is a wave-like feeling of distress, causing an uneasy feeling in the stomach or back of the throat that signals the potential for vomiting. Dry heaves (no stomach contents are released) may accompany nausea. Vomiting is the forceful return of stomach contents through the mouth. Nausea may or may not be accompanied by vomiting. People with a history of motion sickness or nausea and vomiting associated with pregnancy are more prone to experience problems during treatment. Women of menstrual age are at greatest risk for nausea and vomiting to be problematic.

Different Types of Nausea and Vomiting

- **Anticipatory:** This type of nausea/vomiting occurs when a familiar sound, sight or smell triggers the remembrance of a prior unpleasant episode with nausea and vomiting causing the same response. This may occur before chemotherapy drugs are given. Stress and anxiety increase the likelihood of occurrence. This could occur, for example, when you are getting ready to go for a treatment.
- **Chemotherapy induced:** Occurs within the first 24 hours of your chemotherapy.
- **Delayed nausea/vomiting:** Occurs after the first 24 hours of chemotherapy administration; may peak at 48 to 72 hours. Some drugs have a high potential for delayed nausea/vomiting.
- **Refractory (stubborn):** Persistent and non-responsive to most traditional medications.

Medications for Nausea and Vomiting

Antiemetic medications are given before chemotherapy treatment and additional medications are ordered to be taken at home if needed. Many other medications, such as pain medications or antibiotics may also cause nausea or vomiting. Most nausea drugs are more effective when taken with a small amount of fluid, either prior to nausea or at the first signs of nausea. You should abstain from eating or drinking for at least half an hour to allow the medication to begin to work. Proceed with small amounts of fluids before eating a meal.

Self-help Interventions

There are self-care measures you may do in addition to medication that may prevent or reduce the occurrence of nausea and vomiting. Some of these steps may work as well as the medication will. First, it is important to recognize the signs and symptoms that alert you to an impending episode. The center in the brain that controls vomiting is closely related to the respiratory and heart functions, and these may serve as clues to take action to prevent a vomiting episode.

Signs That May Precede or Accompany Nausea and Vomiting:

- Increase in oral secretions with nausea
- Uneasy feeling in stomach
- Increase in heart rate with nausea prior to vomiting
- Warmth of skin or sweating prior to vomiting

If Signs of Nausea Occur:

- Move to a well-ventilated, cool environment and lie down if possible
- Eliminate any environmental stimulus, such as loud noise, noxious smells or bright lights
- Avoid sudden movements; minimize activities during nausea
- If possible, place a cool, damp cloth to forehead and/or neck
- Take a series of long, deep breaths and hold them for five seconds before exhaling slowly
- Distract yourself with music, reading or television

If Vomiting Occurs, You May Experience:

- Decrease in heart rate and blood pressure during vomiting
- Weakness or dizziness
- Paleness and coolness of skin
- Increase in depth and rate of breathing pattern

After Vomiting:

- Estimate amount vomited (important if vomiting is frequent)
- Rinse mouth thoroughly with cool water to remove aftertaste
- Wipe face with a cold, wet cloth
- Refrain from eating; instead, sip cool liquids slowly in small amounts; eat ice chips
- If vomiting has occurred frequently, it is best to refrain from solid food for four to eight hours past the last vomiting episode
- Take nausea medication with a small sip of fluid
- Rest, if possible

Preventing or Reducing Nausea and Vomiting:

- Select foods that are room temperature or cold; warm or hot foods have odors that often stimulate the vomiting center.
- Select bland foods for your diet, such as mashed or baked potatoes, applesauce, yogurt, cottage cheese, sherbet, crackers or toast. Highly seasoned food will often aggravate the condition.
- Sip clear cool liquids to reduce nausea (apple juice, cranberry juice, lemonade, broths, Gatorade®, ginger ale, tea, colas and gelatins are usually well tolerated in small amounts).
- Try sour foods such as lemons, sour pickles, hard sour candy or lemon sherbet; rinse your mouth with lemon juice and water if your mouth is not sore from chemotherapy.
- Avoid fried, greasy, highly salted, spicy foods and foods with strong odors.

- Avoid smelling strong odors such as perfume or cleaning chemicals; avoid being around other people who are vomiting.
- Avoid odors of cooking food.
- Eat light meals often, rather than large heavy meals.
- Ask nurse or physician about relaxation or meditation techniques.
- Try to relieve nausea or vomiting with the same foods or beverages that you used in the past when you were sick with the flu or pregnancy; often these foods will give effective relief.
- Maintain regular bowel movements. Constipation can be a contributing cause of nausea. Many drugs used during cancer treatment contribute to constipation. If constipated, you should contact physician for an appropriate laxative. Bowel obstruction is another potential cause of nausea.
- Narcotic pain medications often cause constipation.

Determining Pattern of Nausea and Vomiting:

Learn how to identify the type of nausea and any contributing causes that may stimulate you. This can be accomplished by keeping a record of nausea and vomiting for at least one week on a pocket calendar.

- Write down the day treatment was received. Note any nausea/vomiting the day prior.
- Every day, record levels of nausea experienced throughout the day using a scale:
0 = none 1 = mild 2 = moderate 3 = severe
- Record any dry heaves or vomiting; include time and estimated amount.
- Note any triggers or activities that may help identify cause (odors from foods, cooking, cleaning agents, room deodorizers, perfumes, after a heavy meal, after fried foods, after bathing or exercise, after pain medication, etc.).
- Write down any medication taken to relieve nausea/vomiting and its effectiveness.

From this record, a pattern usually forms as to the type of nausea you are having, the time it usually occurs and the potential stimulus. You can then take steps to reduce your problem. The collected information will also help to facilitate your discussions with your healthcare providers about what can be done to get the problem under control.

Different types of nausea require different drug interventions. Sometimes, reports of nausea and vomiting are not sufficient information to effectively understand a particular problem and the most appropriate antiemetic treatment to prescribe. For example, if nausea is anticipatory, before you go for treatment you may need to take anti-nausea medication at home; if it is refractory and resistant to prescribed medications, a new type of nausea management may need to be implemented. Some patients with refractory nausea and vomiting receive continuous I.V. medication by wearing a battery-packed device delivering around-the-clock medication during the time of their nausea.

When to Contact Healthcare Provider

If you are unable to keep anything in your stomach for 24 hours or have significant weight loss, your healthcare provider should be notified for additional interventions to reduce the vomiting. Persistent nausea and vomiting can create serious health problems from dehydration and electrolyte imbalance. While nausea and vomiting are expected side effects of treatment, they need to be addressed and treated by your healthcare provider to maintain the highest quality of life possible during your treatment for cancer.

Additional Instructions:

Chemotherapy Drug Nausea and Vomiting Potential			
Chemotherapy drugs vary in causing nausea and vomiting. Listed below is a table that defines the potential for each drug.			
Incidence	Agent	Onset (hr) of Nausea/ Vomiting	Duration(hr) of Nausea/ Vomiting
Very High	Cisplatin >50 mg/m ²	1 - 6	24 - 72+
	Cyclophosphamide >1500 mg ²	4 - 8	12 - 24
High	Carboplatin	4 - 6	12 - 24
	Doxorubicin >60 mg.m ²	4 - 6	6 - 18
	Etoposide	4 - 6	24+
	Methotrexate >1g/m ²	1 - 12	24 - 72
Moderate	Doxorubicin 20 - 59 mg/m ²	4 - 6	6+
	Doxorubicin liposome	4 - 6	4
	Epirubicin 60 - 90 mg/m ²	2 - 6	24+
	Fluorouracil	3 - 6	24+
	Gemcitabine	2 - 6	24
	Mitomycin-C	1 - 4	6+
Low	Docetaxel	4 - 8	6 - 8
	Paclitaxel	4 - 8	6 - 8
	Vinblastine	4 - 8	4
	Vinoreblin	4 - 8	4
Very Low	Vincristine	4 - 8	4

Trastuzumab (Herceptin®) moderate to low potential

Adapted: NCCN Clinical Practice Guidelines; Jordan, K. et al. Oncologist 2007

Drugs Used to Prevent or Treat Nausea and Vomiting Antiemetic Drugs	
Generic Name	Trade Name
Dolasetron	Anzemet®
Granisetron	Kytril®
Dexamethasone	Decadron®
Methylprednisolone	Medrol®
Metoclopramide	Reglan®
Ondansetron	Zofran®
Tropisetron	Navoban®



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Pregnancy After Breast Cancer

If you are still in your childbearing years, you may want to know whether you can have a child after breast cancer surgery or treatment. Many women have had healthy babies after breast cancer surgery and treatment, even in their 40s. A female has all of her eggs in her ovaries at the time of her birth. The eggs in the ovaries are not damaged by chemotherapy because the cells of the eggs are not in the dividing process during treatment. Chemotherapy may cause a menopausal condition that may or not be reversed after treatment is completed. If you remain in a menopausal condition (your menstrual periods do not return) you will not be able to conceive. If you regain your periods, you may or may not be able to become pregnant. However, many variables must be considered when making a decision to get pregnant after surgery and treatment. It is a decision that requires gathering all the facts and carefully weighing the risks and benefits.

You need to discuss the following variables with your team of healthcare providers. Their focus will be on your health and how pregnancy may affect you.

Questions About Your Cancer:

- Your type of cancer
- Degree of difficulty in diagnosing your cancer (For example, it was not visible on mammogram or was not a palpable lump. This makes monitoring you during pregnancy even more difficult.)
- Ductal involvement (ductal or in situ cancer)
- Tumor size and lymph node involvement
- Evidence of spread to other parts of your body
- Type of treatment required to initially treat your cancer (chemotherapy)
- Response of cancer to treatment
- Time elapsed since treatment (Some healthcare providers ask patients to wait for a certain period of time.)

Ask your healthcare providers what other variables you may need to consider before making your decision. You can only make an informed decision when you have gathered all the data from your treatment team and their perspectives on how pregnancy could affect you.

Pregnancy does not cause breast cancer. However, if your cancer recurs, pregnancy may preclude some treatment options that would provide optimal treatment at the time of discovery. The final decision is an individual one. You have to determine the degree of risk you are willing to take to have a baby. Your healthcare providers will be happy to assist you by providing the medical facts to help you make a decision that's right for you and your family.

Additional Information: