










A PATIENT GUIDE TO CAROTID ARTERY DISEASE

stonybrookvascularcenter.com
(631) 638-1670



Stony Brook **Medicine**

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WELCOME TO STONY BROOK MEDICINE

The *vascular and endovascular surgery team* at Stony Brook Medicine is committed to providing you with outstanding care. Patient education is an extremely important part of your care, before and after surgery. By becoming an educated and active member of your healthcare team, you will have an integral role in your treatment and recovery.

Now that you and your physician have decided that you need surgery, you may have some questions and concerns. This binder will help answer your questions, as well as provide general information about your condition and treatment. Knowing what to expect can help make your hospital stay more pleasant and help speed up your recovery.



YOUR VASCULAR AND ENDOVASCULAR SURGERY TEAM



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CAROTID ARTERY

WHAT IS CAROTID ARTERY DISEASE?

The carotid arteries are two main arteries that carry oxygen-rich blood from your heart, up through your neck to your brain. Typically, with age, a cholesterol rich plaque builds up within the carotid arteries, causing them to become narrow and stiffen.

Strokes result either from obstruction of blood flow through the carotid arteries or when pieces of plaque break off and flow to the brain. Left untreated, carotid artery disease may lead to temporary or permanent disability and even death.

Stroke is the third leading cause of death and permanent disability in older adults in the U.S.

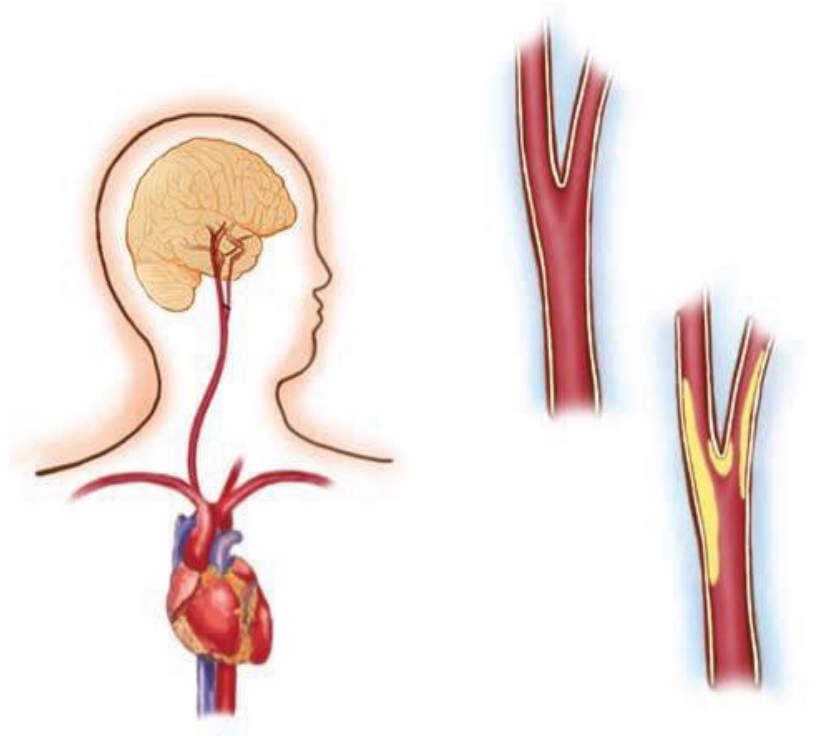
During the early stages of carotid artery disease symptoms may not be present. Carotid artery disease often develops slowly and the condition might not be obvious until it is severe enough to deprive the brain of blood and oxygen, causing a stroke or transient ischemic attack (TIA). **TIA's are warnings or "mini strokes" that cause temporary symptoms lasting from a few minutes to a few hours.** These can be strong predictors of future and more severe strokes.

Carotid artery disease severity can be assessed by a non-invasive duplex ultrasound exam. Treatment options depend on the degree of narrowing (stenosis), and may include medications, carotid stenting, or an open carotid endarterectomy. All patients with carotid artery disease require frequent follow-up visits to examine the progression of the disease.

RISK FACTORS FOR DEVELOPING CAROTID ARTERY DISEASE

The following are risk factors that put an individual at a higher risk of developing carotid artery disease:

- Former or current smoker
- Family history
- Age
- Sedentary lifestyle
- Diabetes
- High cholesterol
- High blood pressure
- Obesity



CAROTID ARTERY

WHAT ARE THE SYMPTOMS?

The symptoms of a TIA are similar to a stroke and include:

- Weakness, numbness or tingling sensation on one side of your body
- Double vision or Sudden vision loss in one eye (feeling of a curtain being pulled over one eye)
- Difficulty speaking clearly or understanding speech
- Sudden trouble walking, dizziness or loss of balance or coordination

You should **contact your physician immediately and go to the nearest emergency room if you experience any of these symptoms.** Symptoms of a TIA do not last as long as stroke symptoms and completely resolve within 24 hours. If your symptoms do not resolve, a stroke has likely occurred.

WHAT TESTS WILL I NEED?

Your physician will first obtain a thorough history and physical examination. During your examination, he or she will listen for sounds that indicate turbulent flow through your carotid arteries. This turbulent flow is called a carotid bruit. After your examination, your physician may proceed with imaging studies.

These include:

- *Carotid Duplex Ultrasound:* A noninvasive study that uses high-frequency sound waves to assess the structure and flow within your blood vessels
- *CT Scan:* An imaging modality that uses a series of pictures in order to reconstruct images of your brain and carotid arteries. Your physician may request that contrast dye be used to enhance the appearance of your arteries. In this case, you may be required to go for a blood test beforehand to ensure that your kidney function is sufficient to appropriately eliminate the contrast dye. **Inform your physician of any allergies to contrast dyes in advance.**
- *Magnetic Resonance Angiography (MRA):* A noninvasive imaging test that uses radio waves and magnetic fields to create detailed images of your carotid arteries. Contrast may also be used to enhance the projections in this study
- *Angiography:* Is a minimally invasive imaging test performed by inserting a catheter through an artery usually in your groin or wrist. The catheter is guided to the neck and contrast dye is injected to clearly visualize the carotid arteries. This may require coming to the hospital for routine lab tests prior to the test.



CAROTID ARTERY

TREATMENT OPTIONS

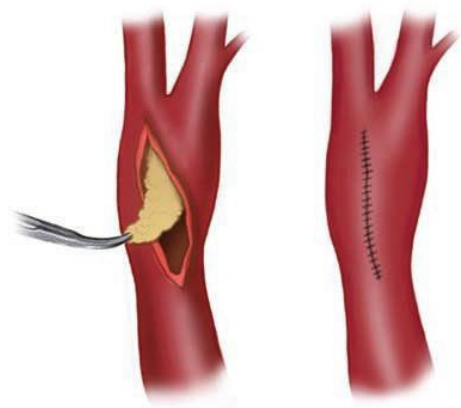
Your vascular surgeon will determine the appropriate treatment depending on the degree of narrowing (stenosis), presence of symptoms and medical history. Observation and/or medical management may be recommended. If you are **asymptomatic** (experiencing no symptoms) your physician may choose to monitor your disease once every year with a carotid duplex ultrasound exam. This will monitor the progression of narrowing in your carotid arteries.

If you have a significant narrowing, or are currently having symptoms of TIA or stroke, you may be a candidate for a surgical intervention. There are currently two options for surgical treatment available, carotid endarterectomy and carotid artery stenting. Your physician will determine which treatment option is appropriate.

CAROTID ENDARTERECTOMY

A carotid endarterectomy is the removal of plaque from the inner lining of your carotid artery.

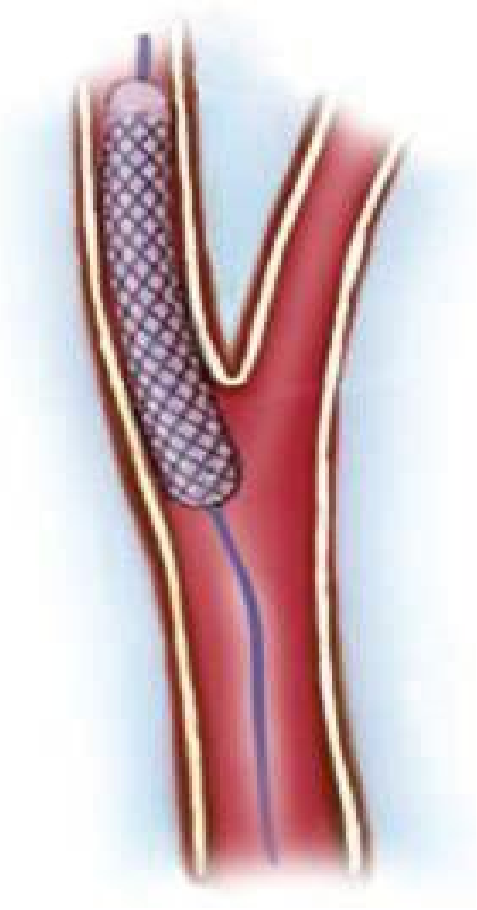
- An incision is made in your neck to expose the artery
- The surgeon will clamp the artery above and below the area of blockage to temporarily stop blood flow
- Occasionally, your surgeon will place a shunt to preserve blood flow to the brain during the procedure
You may not require a shunt if your brain is receiving adequate flow from other arteries
- An incision is made in the artery and the plaque is loosened from the wall and then removed
- The incision is sutured closed. Sometimes a patch is placed on the artery to provide strength at the surgical area and prevent narrowing
- Sometimes, a drain is placed through the incision to facilitate drainage of excess fluid and blood. This drain is removed before you are discharged
- After surgery, you should anticipate a hospital stay of 24 to 48 hours
- **Complications** associated with this procedure are rare, but may include stroke or transient ischemic attack, bleeding, infection, heart attack, hoarseness, numbness or cranial nerve injuries
- **After surgical treatment of carotid artery disease, routine follow-up is required, as well as an ultrasound exam to monitor for recurrent narrowing**



CAROTID ARTERY

CAROTID ARTERY STENTING

- This is a minimally invasive procedure usually performed under local anesthesia to treat carotid artery disease
- There are two ways to perform carotid artery stenting: one is called transfemoral carotid artery stenting (**TFCAS**) and the other is called transcatheter artery revascularization (**TCAR**)
- **TFCAS:** Your surgeon will puncture the femoral artery in the groin and insert a sheath (protective covering) into the opening. A catheter is then inserted into the sheath and guided to the carotid arteries. Your brain is protected from any debris dislodged during the procedure by a special device called a “filter.” The area of narrowing in your carotid artery is then treated by a combination of ballooning and stent placement
- **TCAR:** TCAR is unique in that the catheter is connected to an innovative filtering system that temporarily reverses blood flow in order to keep any loose potentially stroke-causing plaque fragments from traveling to the brain. The area of narrowing is then treated by a combination of ballooning and stent placement. Once the stent is in place, the filtering system is turned off and your blood flow resumes its normal direction (revascularization)
- Finally, in both procedures, a completion angiogram is performed to ensure the procedure was successful and the catheters are removed.
- Carotid artery stenting and endarterectomy are equally durable. Your physician will work with you to determine which treatment modality is optimal.



CAROTID ARTERY

RISKS AND COMPLICATIONS FOR CAROTID ENDARTERECTOMY AND CAROTID STENTING

- TIA or stroke
- Bleeding and infection
- Heart attack
- Blood clots
- Abnormal heart rhythms
- Nerve injury
- Restenosis (re-narrowing)

RECOVERY


After either carotid endarterectomy or carotid stenting, you will likely stay in the hospital from 24 to 48 hours. You can expect to return to normal activities in approximately one week.

- Take all medications as prescribed
- If you have a neck or groin incision, keep the site clean and dry
- Avoid lifting objects heavier than ten pounds
- Use caution when shaving if you have a neck incision
- Follow up with your surgeon in one to two weeks after discharge

WHEN TO CALL YOUR PHYSICIAN

If you have symptoms of stroke or a transient ischemic attack (TIA), call 911 immediately and go to the nearest emergency room. The symptoms of TIA or stroke are any sudden onset of weakness, numbness or tingling sensation on one side of your body; double vision or loss of vision in one eye or the feeling of a curtain being pulled over one eye; difficulty speaking clearly or understanding speech; trouble walking, dizziness or loss of balance or coordination.

If you experience the following, call your surgeon:

- Redness, warmth, excessive pain, drainage or bleeding from your incision or puncture site
 - After carotid stenting; bleeding from the access site, numbness, coolness or pain in your leg or arm
 - Changes in your mental status, such as confusion or severe headaches
 - Shortness of breath or chest pain
 - Fever greater than 101°F
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PLANNING FOR SURGERY

PREOPERATIVE SERVICES

Our preoperative services help prepare you for a safe surgical experience. The purpose of the preoperative visit is to identify important risk factors and to help ensure the best possible outcome. Bring this binder to your preoperative visit. You should expect to be there for about 2 hours. This visit may include:

- Medical history and physical exam
- Lab work, EKG and x-rays
- Consultation with an anesthesiologist
- List of current medications

* After you and your surgeon have arranged for a date for surgery, you will be contacted to make arrangements for your visit. Your preoperative visit should take place approximately 2 weeks before your surgery.

For more information about planning for surgery, please visit Stony Brook's Pre-Surgical Admissions Website: stonybrookmedicine.edu/presurgicaladmissions.

YOUR PREOPERATIVE VISIT WILL TAKE PLACE AT:

Stony Brook Pre-Operative Services
1320 Stony Brook Road
Stony Brook, NY 11790
631.444.9404

DIRECTIONS TO THE PREOPERATIVE SERVICES CENTER

From the Long Island Expressway

- Take the Long Island Expressway (I-495) to Exit 62 North, Nicolls Rd. (CR 97)
- Travel approximately 8 miles
- Make a left on Route 347, going west
- The second traffic light is Route 347/Stony Brook Rd.
(Two Options: Make a right or Go Straight)

Option 1: Make a Right

- Make a right onto Stony Brook Rd., heading north
- Make a left into back of Coventry Commons shopping center, after Ralph's Italian Ices

Option 2: Go Straight

- Go through the traffic light and pass Duane Reade/Starbucks/The Vitamin Shoppe
- Make a right into the Coventry Commons Shopping Center. We are located in the rear corner.

From Stony Brook Hospital

- Exit the Hospital on Health Sciences Center Drive South Entrance
- Cross over Nicolls Road (Health Sciences Drive becomes South Drive)
- Follow South Drive to the end and make a left onto Stony Brook Road (heading south). Just before Route 347, on the right is Coventry Commons Shopping Center, turn right into shopping center (just before Ralph's Italian Ices), we are located in the rear corner

PLANNING FOR SURGERY

It is important that you bring the following with you to your preoperative visit:

- List of current medications, including herbal supplements and vitamins
- List of current physicians and phone numbers
- Insurance information
- Recent cardiology, pulmonary and other specialty clearance evaluations

THE NIGHT BEFORE SURGERY

- The evening before your surgery, a staff member will call you to let you know where and when to report for your surgery. If your surgery is on a Monday, you will receive a call the Friday before
- **DO NOT** eat or drink anything after midnight
- **Continue taking aspirin**
- If you are taking **clopidogrel (Plavix®)** or **Tricagrelor (Brilinta®)**, ask your surgeon if you should continue
- If you are taking **Prasugrel (Effient®)**, **Ticlopidine (Ticlid®)**, ask your surgeon for a stop date
- If you are taking **warfarin (Coumadin®)**, **Dabigatran (Pradaxa®)**, **Rivaroxaban (Xarelto®)**, **Apixaban (Eliquis®)** or **Edoxaban (Savaysa®)** ask your surgeon for a stop date
- You may need to be placed on an injectable blood thinner for other underlying clotting conditions
- If you are taking a **diuretic** medication, ask your surgeon if you need to discontinue prior to surgery
- If you are taking **insulin** or **oral diabetic medications**, you need specific instructions regarding your morning dosage on the day of surgery
- Other than the medications listed above, continue taking your current medications including the day of surgery, with small sips of water
- **DO NOT** wear makeup, lotion or nail polish
- **DO NOT** shave the area where you are having surgery
- Remove all piercings and do not wear jewelry
- Pack a small bag of personal items (e.g., pajamas, robe, toothbrush) for a family member to bring to you when you arrive to your room postoperatively
- Plan to leave your glasses, dentures, hearing aids or any other prosthetic devices with a family member when you arrive

PLANNING FOR SURGERY

PREOPERATIVE PREPARATION

Skin Care: Take a bath or shower the **night before and the morning of surgery**.

Do the following:

1. Use the chlorhexidine scrub that was provided at your preoperative visit to scrub your entire body, especially the area where you will be having surgery
2. Rinse well to remove all of the soap off your body.
3. Dry thoroughly with a clean towel.
4. Put on clean clothes.
5. **DO NOT** use any lotion, cream or powder.
6. 24 hours before the surgery **DO NOT** shave the area where the surgery will be performed.

Inform your physician of the following:

- If you are taking steroids, such as prednisone
- If you have diabetes
- If you have a history of radiation to the surgical area
- If you have had previous surgery in the same area
- If you currently smoke
- If you may have any open wounds or infections
- If you live in a nursing home (or other healthcare setting)

Outpatient: Someone from pre-surgical admissions will call you the evening before surgery to let you know when and where to report for your surgery. Family members can accompany you to pre-surgical admissions, where you will be prepared for your surgery.

Inpatient: If you are already in the hospital, a staff member will tell you what time your surgery is scheduled. Immediate family members who wish to see you before surgery should arrive one to two hours before your scheduled surgery time.

There is a waiting room for your family and friends. Pre-surgical admissions/surgical waiting room is located on Level 4, and the phone number is (631) 638-2931. Family members should check in with the receptionist in the waiting room, and leave a cell or home phone number so that they can be contacted when information about you becomes available. The surgeon will talk with family members and friends in the waiting area when the surgery is completed.

PLANNING FOR SURGERY

PARKING

Parking for visitors is available in the hospital parking garage for a fee. A monthly pass might be a less costly option for your family when they visit you depending on your length of stay in the hospital. Good for thirty days, the monthly pass can be purchased at the parking garage office. The telephone number for the Parking Garage Office is 631.444.6607.

Valet parking is also available for a fee at the main entrance of the hospital and at the surgical drop-off area during the following hours:

7 am to 9 pm, Monday through Friday

9 am to 9 pm, Saturday and Sunday

DIRECTIONS TO PRE-SURGICAL ADMISSIONS

From the Long Island Expressway

- Take the Long Island Expressway (I-495) to Exit 62 North, Nicolls Road (CR 97)
- Travel approximately 8 miles, crossing Nesconset Highway (Route 347)
- At the third traffic light, turn right at the sign for “Stony Brook south entrance, East Campus” (Health Sciences Drive)
- Turn left at the second traffic light
- If you are being dropped off or wish to use valet parking, you can go to the surgical drop-off area, which is located immediately on the right
- Otherwise, continue to go straight to enter the hospital parking garage
- When you walk into the main entrance of the hospital (Level 5, lobby), please stay to the right. Take the escalators down one level to Level 4, and the Pre-Surgical Admissions/Surgical Waiting Room is on the left

From Route 25A

- Travel south on Nicolls Road (CR 97)
 - At the third traffic light, turn left at the sign for Stony Brook south entrance, East Campus (Health Sciences Drive)
 - Turn left at the second traffic light
 - If you are being dropped off, or wish to use valet parking, you can go to the surgical drop-off area, which is located immediately on the right
 - Otherwise, continue to go straight to enter the hospital parking garage
 - When you walk into the main entrance of the hospital (Level 5, which is the ground level), please stay to the right. Take the escalators down one level to Level 4, and the pre-surgical admissions/surgical waiting room is on the left
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INFORMATION FOR FAMILY AND FRIENDS

DINING SERVICES

The Market Place Café and the Skyline Deli serve hot meals and sandwiches. Starbucks offers specialty coffees, teas, pastries, baked goods and grab-and-go sandwiches.

Market Place Café

Level 5, off the hospital lobby

Monday through Friday, midnight to 10:30 am and 11 am to 8 pm

Saturday, midnight to 8 pm

Skyline Deli

Level 5, off the hospital lobby

Monday through Friday, 8 am to 3 pm

Sunday, midnight to 8 pm

Starbucks

Level 5, hospital lobby

Monday through Friday, 6 am to midnight

Saturday and Sunday, 7 am to midnight

GIFT SHOP

The Gift Shop is located in the Main Lobby of the hospital on Level 5. The shop offers a variety of gifts, flowers, cards and magazines for purchase. The gift shop is open Monday through Friday from 7:30 am to 9 pm, and Saturday and Sunday from 8 am to 6 pm.

CHAPEL

The Chapel is located in the main lobby/front entrance of the hospital on level 5, and is open 24 hours a day. Please call the hospital operator if you would like a visit with someone from our hospital chaplaincy office.

WHILE IN THE HOSPITAL

POSTOPERATIVE CARE

Work with your surgeon and other healthcare professionals as a team. Make sure that you are included in decisions about your care. Ask a family member or friend to be present and to be your advocate. While you are in the hospital after surgery, your vascular surgery and healthcare team will ensure that every step is taken to help prevent infection.

PAIN CONTROL

Pain relief is an important part of your care after surgery. Effective treatment of pain will allow for you to recover sooner. After your anesthesia wears off, **tell your nurse as soon as you feel pain or discomfort.** It is important to ask for pain medication as soon as the pain begins. If you experience pain while getting out of bed or while walking, request pain medications before you do these activities.

To help better understand the degree of pain, you will be asked to rate your pain on a scale of 0 to 10, with 0 indicating that you have no pain and 10 indicating you are in extreme pain.

SUPPORT AND EDUCATION FOR PATIENTS AND FAMILIES


Members of the vascular team who are on hand prior and following surgery, will make personal visits while in the hospital. The vascular surgery team will address any concerns or issues that may arise while you are in the hospital and after you are discharged. Our team of experts will support patients and their family members every step of the way.

PARTNERSHIP AMONG REFERRING PHYSICIANS

Communication between referring physicians and specialists is important to the health and safety of our patients. We maintain a close collaborative relationship with your referring physician to optimize and ensure a safe transition of care. We will send your medical records to your primary care physician once you are discharged from the hospital.

PATIENT EDUCATION CHANNEL

During your hospital stay, tune into the Patient Channel (channel 29). This channel provides information to help you manage your medical condition and improve your health. Programs are also available at your convenience online at patientchannel.com.



WHILE IN THE HOSPITAL

PREVENTING INFECTIONS

Please ask family members and friends who are sick, have colds or feel ill not to visit while you are in the hospital.


The most important way to prevent infections is **HAND WASHING**. It is hospital policy that all doctors, nurses, and caregivers as well as family members, visitors and anyone who enters a patient's room, wash their hands immediately before entering and after leaving your room. We encourage you to ask anyone who enters your room if they have washed their hands.

PREVENTING BLOOD CLOTS

If you are having surgery or will be hospitalized for a period of time, it is important to ensure proper prevention and treatment of blood clots. You will be given medications that will thin your blood to prevent clotting while you are immobilized after surgery. If you are not a candidate for blood thinners, you will have sequential compression devices (SCD's) placed on your calves. These stockings help prevent swelling and the formation of blood clots by improving blood flow. It is important that you wear these at all times while you are not walking. It is important to get out of bed on the first postoperative day if you are in stable condition. Ask the nursing staff for assistance with walking.

PREVENTING PNEUMONIA

During hospitalization, you are at risk for developing pneumonia. You can help prevent pneumonia by doing certain breathing exercises. Your doctor or nurse will provide you with a device called an incentive spirometer. This hand-held device will expand your lungs by helping you breathe more deeply and fully. This will assist in lowering your risk of acquiring pneumonia as you heal from surgery. A member of your healthcare team will instruct you on how to use the device. It is important that you utilize this device at a minimum of **10 times per hour** while you are in the hospital, and continue using it at home after discharge until you have fully recovered.



HELPFUL TELEPHONE NUMBERS

All numbers are within the “631” area code.

Stony Brook University Hospital	689-8333
Vascular Surgery Center	638-1670
Pre-Admission Testing	444-2948
Pre-Surgical Admissions, Level 4	444-1002
Surgery Waiting Room, Level 4	638-2931
Cardiovascular Intensive Care Unit (CVICU)	216-3780
Cardiovascular Intermediate Care Unit (CVICR)	216-3770
Food and Nutrition Services	444-2900
Care Management Department	444-2552
Chaplaincy	Dial “0” from any hospital phone
Parking Garage	444-6607
Patient Advocacy	444-2880
HealthConnect	444-4000
Customer Accounts	444-4151

DISCHARGE INFORMATION AND FOLLOW-UP

The hospital goal for discharge is before 11 am.

Please make arrangements for transportation in advance.

Prior to discharge you will be given a list of instructions and medications. You will need to schedule an appointment to see your surgeon at one of our outpatient clinics 1 to 2 weeks after your procedure.

Outpatient Clinic Locations

Appointments, tel: 631.638.1670 fax: 631.638.1692

23 South Howell Avenue, Suite G, Centereach, NY 11720

500 Commack Road, Suite 102, Commack, NY 11725

225 West Montauk Highway, Hampton Bays, NY 11946

600 Main Street, Suite B, Center Moriches, NY 11934

280 Union Ave, Holbrook, NY 11741

10095 Main Road, Mattituck, NY 11952

74 Commerce Drive, Suite 4, Riverhead, NY 11901

676 County Road 39A, Southampton, NY 11968

240 Meeting House Lane, Southampton, NY 11968

WHAT TO DO AT HOME AND WHAT TO LOOK FOR

WOUND CARE

After you are discharged from the hospital, it is important that you keep your surgical incision clean and dry. This will help your wounds heal faster and will help prevent infection.


Follow these instructions, unless instructed otherwise by your doctor:

- Take a shower and use a clean washcloth, water and soap to gently wash your incisions
- Pat dry with a clean towel
- Apply a fresh, clean dressing to cover the wound
- Repeat 1 to 2 times daily

SIGNS AND SYMPTOMS OF INFECTION

You may experience pain and discomfort the first few days after surgery. The wound may be slightly red or swollen. A small amount of blood or clear fluid may drain from your wound. This is normal and should decrease each day.

CALL YOUR SURGEON if you experience the following:

- Fever over 101° F, chest pain, shortness of breath, nausea or vomiting
 - A sudden change in color, temperature or sensation of any limb
 - Increased pain over the incision site
 - Increased cloudy and/or thick colored drainage from the wound
 - If the wound opens up or becomes hot, red or very tender
 - Unusual weakness or faintness
 - Discomfort, burning or blood in your urine
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WHAT TO DO AT HOME AND WHAT TO LOOK FOR

ACTIVITY

Follow activity instructions that are given to you at discharge. If there are no walking limitations, it is important that you do not stay in bed. You should walk 3 to 4 times a day for 10 to 15 minutes. This will help prevent developing a deep vein thrombosis (DVT) in your legs.

PAIN MEDICATION AT HOME

When you leave the hospital, you may be prescribed pain medication to take at home. You should take this medication as prescribed. Pain medication may make you constipated, so it is important to drink at least 8 to 10 glasses of water daily. You may also need to take an over-the-counter stool softener.

PREVENTING PNEUMONIA

When you leave the hospital, you can reduce your risk of acquiring pneumonia by performing certain breathing exercises. Your doctor or nurse will provide you with a device called an incentive spirometer. This hand-held device will expand your lungs by helping you breathe more deeply and fully. A member of your healthcare team will instruct you on how to use the device. It is important that you utilize this device at a minimum of 10 times per hour until fully recovered.

