Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

About Your Microvascular Reconstruction Surgery Using Free Tissue Transfer

This information will help you learn about microvascular reconstruction surgery using free tissue transfer and how to care for yourself after it.

About your surgery

After surgery to remove a tumor, you may have space in your body where the cancer used to be. Microvascular reconstruction surgery is a surgery done to repair the space left in your body. This is done by transferring tissue from one part of your body (donor site) to the area that needs to be repaired (recipient site).

Your surgeon will remove the tumor, bone, or soft tissue from the area. Your reconstructive surgeon will take a free flap (block of skin, tissue, muscle, or bone) from the donor site and attach it to the recipient site. They will use a microscope to connect the tiny blood vessels in the free flap with the blood vessels at the recipient site. They will

connect the blood vessels using very thin sutures (stitches).

They may need to connect the free flap to the recipient site with a vein. If this happens, your reconstructive surgeon will make a small incision (surgical cut) and take a vein from your arm or leg.

You may also need a skin graft to cover the donor or recipient site. A skin graft is tissue taken from one part of your body and moved to the area that must be covered. This is usually taken from your buttock or thigh.

This surgery can be done in different ways. Some of the information in this resource may not apply to you. Ask your healthcare provider if you have any questions.

Before your surgery

Getting ready for your surgery

You and your care team will work together to get ready for your surgery. Your nurse will give you the resource *Getting Ready for Surgery* (www.mskcc.org/pe/getting-ready-surgery). It tells you what you need to do to get ready for your surgery. Your nurse will also give you any other resources that you may need.

You can expect to have the following appointments before your surgery:

- You'll meet with your main surgeon who will give you more information about your surgery.
- You'll also meet with your reconstructive surgeon. They may decide that you should have:
- A medical clearance visit. This visit will help your surgeon plan your care to lower any risks you may have with surgery.
- A test to check your heart and lungs.
- A test to check the blood vessels in your legs. This is called an angiogram.
- A test to check the blood vessels at your potential donor site.
- Other tests such as a computed tomography (CT) scan, magnetic resonance imaging (MRI), and x-rays.
- If you're having head and neck surgery, you'll meet with a dentist from our Dental Service. You may have a dental x-ray and other dental scans.

Presurgical testing (PST)

Before your surgery, you'll have an appointment for presurgical testing (PST). The date, time, and location will be printed on the appointment reminder from your surgeon's office. It's helpful to bring the following things to your PST appointment:

- A list of all the medicines you're taking, including prescription and over-the-counter medicines, vitamins, supplements, patches, and creams.
- Results of any tests done outside of MSK, such as a cardiac stress test, echocardiogram, or carotid doppler study.
- The name(s) and telephone number(s) of your healthcare provider(s).

You can eat and take your usual medicines the day of your appointment.

During your PST appointment, you'll meet with a nurse practitioner (NP). They work closely with anesthesiology staff (specialized healthcare providers who will give you anesthesia during your surgery). Your NP will review your medical and surgical history with you. You may have tests, such as an electrocardiogram (EKG) to check your heart rhythm, a chest x-ray, blood tests, and any other tests needed to plan your care. Your NP may also recommend that you see other healthcare providers.

Your NP will talk with you about which medicines you should take the morning of your surgery.

About drinking alcohol

The amount of alcohol you drink can affect you during and after your surgery. It's important that you talk with your healthcare providers about your alcohol intake so that we can plan your care.

- Stopping alcohol suddenly can cause seizures, delirium, and death. If we know you're at risk for these complications, we can prescribe medicine to help prevent them.
- If you use alcohol regularly, you may be at risk for other complications during and after surgery. These include bleeding, infections, heart problems, and a longer hospital stay.

Here are things you can do to prevent problems before your surgery:

- Be honest with your healthcare provider about how much alcohol you drink.
- Try to stop drinking alcohol once your surgery is planned. If you develop a headache, nausea, increased anxiety, or can't sleep after you stop drinking, tell your healthcare provider right away. These are early signs of alcohol withdrawal and can be treated.
- Tell your healthcare provider if you can't stop drinking.

- Ask us any questions you have about drinking and surgery. As always, all of your medical information will be kept confidential.

About smoking

If you smoke, you can have breathing problems when you have surgery. Stopping even for a few days before surgery can help.

MSK has specialists who can help you quit smoking. For more information about our Tobacco Treatment Program, call 212-610-0507. You can also ask your nurse about the program.

Nicotine can affect microvascular reconstruction by constricting (tightening) your blood vessels. Once these blood vessels are constricted, this can negatively affect your flap. Tell your healthcare provider right away if you smoke or if you're using nicotine supplements, such as gum, patches, or vaping.

Buy a 4% chlorhexidine gluconate (CHG) solution antiseptic skin cleanser (such as Hibiclens®)

4% CHG solution is a skin cleanser that kills germs for 24 hours (1 day) after you use it. Showering with it before your surgery will help lower your risk of infection after surgery. You can buy a 4% CHG solution antiseptic skin cleanser at

your local pharmacy without a prescription.



Figure 1. Hibiclens skin cleanser

The morning of your surgery

Things to remember

- Wear something comfortable and loose-fitting.
- If you wear contact lenses, wear your glasses instead. Wearing contact lenses during surgery can damage your eyes.
- Do not wear any metal objects. Remove all jewelry, including body piercings. The tools used during your surgery can cause burns if they touch metal.
- Do not wear any lotion, cream, deodorant, makeup, powder, perfume, or cologne.
- Leave valuable items at home.
- If you're menstruating (have your monthly period), use a sanitary pad, not a tampon. You'll get disposable underwear, as well as a pad if needed.

Shower with a 4% chlorhexidine gluconate (CHG) solution antiseptic skin cleanser

Shower with a 4% CHG solution antiseptic skin cleanser before you leave for the hospital.

1. Use your normal shampoo to wash your hair. Rinse your head well.
2. Use your normal soap to wash your face and genital area. Rinse your body well with warm water.
3. Open the 4% CHG solution bottle. Pour some into your hand or a clean washcloth.
4. Move away from the shower stream. Rub the 4% CHG solution gently over your body from your neck to your feet. Do not put it on your face or genital area.
5. Move back into the shower stream to rinse off the 4% CHG solution. Use warm water.
6. Dry yourself off with a clean towel after your shower.
7. Do not put on any lotion, cream, deodorant, makeup, powder, perfume, or cologne after your shower.

After your surgery

When you wake up after your surgery, you'll be in the PACU. A nurse will be keeping track of your body temperature, pulse, blood pressure, and oxygen levels. You may be getting oxygen through a thin tube that rests below your nose or a mask that covers your nose and mouth. You'll also have compression boots on your lower legs.

Pain medicine

You'll get epidural or IV pain medicine while you're in the PACU.

- If you're getting epidural pain medicine, it will be put into your epidural space (the space in your spine just outside your spinal cord) through your epidural catheter.
- If you're getting IV pain medicine, it will be put into your bloodstream through your IV line.

You'll be able to control your pain medicine using a button called a patient-controlled analgesia (PCA) device. For more information, read the resource *Patient-Controlled Analgesia (PCA)* (www.mskcc.org/pe/pca).

Tubes and drains

You may have a Foley catheter in your urethra going into your bladder. This tube drains urine from your bladder so your care team can keep track of how much urine you're making. The catheter is usually removed 1 to 2 days after your surgery.

You may also have a Jackson-Pratt (JP) drain to remove extra fluid from the area around your incision. The drain is removed about 5 to 10 days after your surgery. Your nurse will teach you how to care for the drain before you leave.

For more information, read *Caring for Your Jackson-Pratt Drain* (www.mskcc.org/pe/jackson-pratt).

Moving to your hospital room

You may stay in the PACU overnight. After your stay in the PACU, a staff member will bring you to your hospital room.

In your hospital room

The length of time you're in the hospital after your surgery depends on your recovery.

When you're taken to your hospital room, you'll meet one of the nurses who will care for you while you're in the hospital. Your nurse will help you out of bed and into your chair once it's OK with your surgical team.

While you're in the hospital, your healthcare providers will teach you how to care for yourself while you're recovering from your surgery. You can help yourself recover more quickly by doing the following things:

- Start moving around as soon as your healthcare provider says you can. The sooner you get out of bed and walk, the quicker you can get back to your normal activities.
- Use your incentive spirometer. This will help your lungs expand, which prevents pneumonia. For more information, read *How To Use Your Incentive Spirometer* (www.mskcc.org/pe/incentive-spirometer).

What to expect with specific types of reconstruction

Reconstruction in the head and neck area

- After your surgery, you may have:
  - Swelling around your recipient site
  - Changes in your breathing
  - Trouble swallowing
- You may have a tube in your neck to help you breathe. This is called a tracheostomy tube. It will stay in until the swelling goes down.
- If you have a tracheostomy tube, you won't be able to speak. Your nurses will ask you "yes" and "no" questions about how you feel and whether you have any pain. You'll be able to nod your head or write on a pad of paper or a dry erase board if you need or want something.
- You'll have a humidifier collar near your tracheostomy tube. This will moisten the air you breathe and keep the tissues that line your trachea (windpipe) from drying.
- Your nurses will clear out your tracheostomy tube. Over time, they may teach you how to do this.
- The tracheostomy tube is usually removed 7 to 10 days after your surgery.

- Your surgeon may place a feeding tube through your nose into your stomach. This will help you get the nutrients and medicines you need.
- The tube will stay in until your swelling goes down.
- You'll get high-protein liquid feedings and your medicine through this tube.
- Before you're allowed to eat and drink, a specialist may check to make sure it's safe for you to swallow. This is usually done 7 to 10 days after your surgery.
- You may need to sleep without pillows and with your head elevated while you're in the hospital. You can keep your head elevated by raising your bed up and down with a remote. This is to prevent swelling and avoid pressure on the flap. Your surgeon will tell you how long you must sleep this way.

Reconstruction on your arm or leg

- You'll need to keep your arm or leg elevated. Your surgeon or nurse will tell you when you can stop.
- You may get a cast, splint, or sling to prevent the surgical site from moving. It's usually removed or changed 5 to 7 days after your surgery.
- You may have some limits on your physical activities. Your surgeon or nurse will discuss this with you.

- A physical therapist (PT) will work with you while you're in the hospital to make sure you're safe and strong enough to go home.
- If your free flap or skin graft is on your legs or feet, your surgeon or nurse will tell you when you can dangle your legs or walk. This may be for 1 to 3 weeks or more after your surgery.

Reconstruction of your lower back, buttock, or vagina

- You may have a loose surgical binder put on you in the operating room. This will hold your dressings in place.
- You may be placed on a bed that has a special air mattress. This prevents direct pressure on the surgical sites and incision.
- You may be told to lie on your sides or on the side opposite your incision. This is to prevent direct pressure on your incision.
- You may be allowed to walk starting 2 or 3 days after your surgery.
- You may not be able to sit until several weeks after your surgery. Your surgeon will let you know when you may begin to sit for short periods after your surgery. This is to keep you from putting tension on your incisions.

Checking your free flap

For the first week after your surgery, your healthcare providers will check the blood supply to your reconstructed site and nearby tissues. They will do this using a Doppler® ultrasound machine. The machine is noisy, but the ultrasound is painless.

They will also check the temperature and color of your free flap. This is done to make sure you're healing. These exams are very important and will continue during your hospital stay.

Caring for yourself after your surgery

Caring for your donor site

How you care for your donor site will depend on how the wound was closed. It may have been closed:

- By bringing the edges of the skin together. This will look like a line of sutures.
- With a skin graft. If a skin graft was used, it will have a large dressing on it. The dressing is removed 5 to 7 days after surgery. Your nurse will explain how to care for it when you go home. For more information, ask your nurse for the resource About Your Split-Thickness Skin Graft.

If your donor site is on your abdomen (belly), elevate your

knees in bed, by placing a pillow below your knees. When you're out of bed, sit with your feet on a stool. Your PT will show you how to do this.

No matter how the donor site is closed, do not put tension or pull on the site.

Removing your sutures

- Your sutures will be removed about 7 to 10 days after your surgery.
- If you had radiation therapy in the past to your surgical sites, your sutures may stay in place for 2 to 3 weeks or longer.

Limits on physical activity

After your surgery, you may need to avoid certain exercises and movements. This is to make sure you don't create any tension on the newly reattached blood vessels. These limits depend on the location and the type of free flap you have. Your healthcare providers will give you specific instructions.

If your donor site is on your upper back, you may need to limit how much you raise your arms above your shoulders. Your PT will explain this to you.

Diet

Most people can eat a regular diet when they go home. If your surgery was in your mouth, you may need to follow a full liquid or puréed diet. A puréed diet is when all your food is processed in a blender. Your clinical dietitian nutritionist or nurse will review this with you.

Clothing

- Wear comfortable and loose-fitting clothing. Don't wear anything that presses on your free flap. This can affect the blood supply to your free flap.
- If you want to cover the area of your free flap, try a scarf, hat, or shawl. Your nurse will help you choose clothing that is best for the type of surgery you had.
- If your seat belt falls across your incisions, place a small pillow or folded towel under the seat belt on top of the incision.

Caring for your surgical sites at home

- Do not put direct pressure on your free flap. This includes wearing a tight belt, neck tie, or tight bra.
- Do not place direct heat or cold on your surgical sites. This includes hot water bottles, heating pads, electric blankets, and ice packs. Your surgical sites may be numb

and you can hurt yourself without knowing it.

- Do not put anything on your incisions until they're healed, including:
- Makeup
- Perfume and cologne
- After-shave
- Moisturizer
- Do not shave over your incisions while your sutures are still in place. When your sutures are removed, use an electric razor on and around the free flap or reconstructed area.
- Do not take baths or use hot tubs and swimming pools until your incisions are completely healed. This is usually 4 to 6 weeks after your surgery.
- Do not put your surgical sites directly in the sun. After your incisions heal, use a PABA-free sunscreen with an SPF of 30 or higher.
- Check with your healthcare providers before doing any strenuous exercise, such as running, jogging, and lifting weights.

Dealing with changes

You may have temporary or permanent changes in the areas of your surgery. You may have permanent changes in your:

- Appearance. This includes scars at the donor and recipient sites and skin color changes. Your free flap may be a different color than the skin around it.
- Lifestyle. You may not be able to do all of the things you could do before your surgery. This depends on the location of the flap.
- Ability to swallow.
- Ability to eat some types of foods.
- Speech if your surgery was in your mouth.
- Ability to speak if your surgery was on your voice box (larynx).
- Sensation on the skin at your surgical sites. You may have numbness or tingling at the sites. These improve over time, but they will always feel more numb than your skin before surgery.

To learn more about dealing with changes after your surgery, read the “Support Resources” section.

Follow-up appointments

Both of your surgeons will need to see you after you leave the hospital. Call each surgeon's office to schedule an appointment. It's very important that you go to these follow-up appointments. Write down any questions you may have and bring them with you to your appointments.

Support resources

After surgery for a serious illness, you may have new and upsetting feelings. Many people say they felt weepy, sad, worried, nervous, irritable, or angry at one time or another. You may find that you can't control some of these feelings. If this happens, it's a good idea to seek emotional support. Your healthcare provider can refer you to MSK's Counseling Center. You can also reach them by calling 646-888-0200.

The first step in coping is to talk about how you feel. Family and friends can help. Your healthcare providers can comfort, support, and guide you. It's always a good idea to let us know how you, your family, and your friends are feeling emotionally.

Many resources are available to you and your family. Whether you're in the hospital or at home, we're here to help you and your family and friends.

MSK support resources

Counseling Center

646-888-0200

Many people find that counseling helps them. We provide counseling for individuals, couples, families, and groups, as well as medicines to help if you feel anxious or depressed.

Resources for Life After Cancer (RLAC) Program

646-888-8106

At MSK, care doesn’t end after active treatment. The RLAC Program is for patients and their families who have finished treatment. This program has many services, including seminars, workshops, support groups, counseling on life after treatment, and help with insurance and employment issues.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

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