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## PREPARING FOR MOHS MICROGRAPHIC SURGERY

**Mohs micrographic surgery** is the most effective choice of treatment for certain cases of skin cancer. The following information will help you understand what to expect during the Mohs procedure, and how to prepare for a successful recovery. If you have questions, please ask any member of your surgical team, or your dermatologist.

### **About Mohs surgery**

Some tumors are more readily cured by Mohs surgery than by other treatments because this unique procedure allows more complete and thorough examination of the tissue which contains the skin cancer.

Mohs surgery is particularly helpful for tumors in certain areas of the face (such as near the eye or on the nose), cancers which have already been treated unsuccessfully by other methods, larger growths, cancers which have poorly defined margins, and tumors which appear to be aggressive when viewed under the microscope.

### **History of Mohs surgery**

Mohs micrographic surgery is named after Dr. Frederic Mohs, the physician who developed this technique for treating skin cancers in the 1940's at the University of Wisconsin.

His original method involved the application of a chemical paste to the tumors, and the term "chemosurgery" was used to describe his technique. Since his original idea, other physicians have improved and refined the procedure, and today the chemical paste is not used.

### **How the technique is used today**

The tumor is removed from the surrounding skin so that the surgeon may examine the tissue under a microscope, then determine whether more tissue should be cut out. A technician freezes the tissue, cuts the specimen into sections, marks them with dyes, and makes a map to indicate how the sections match the orientation of the cancer in the patient. The Mohs surgeon then analyzes the sections under the microscope.

When the Mohs surgeon examines the skin specimens under the microscope, he or she can determine whether there are residual tumor cells and locate them precisely on the map. If tumor is present at the edge of the specimen, the surgeon removes more tissue from the patient in that specific location. The technician begins the identification process again, and this process is repeated until no further cancer is seen under the microscope.

The Mohs technique creates the smallest possible wound - only a little amount of tissue is removed at a time and the exact boundaries of the tumor are identified. When surgery is complete, there is greater certainty that all the cancer has been removed because the borders of the specimen are more thoroughly examined than with conventional surgery. This means the cure rate is higher and the normal tissue is spared.

## **Mohs surgery may take several hours**

You should plan to spend the whole day for the procedure, although most cases are completed within 1-2 hours. Most of the time is spent waiting as we process the tissue. It is a good idea to bring something to read or a friend to keep you company. Because the extent of your tumor is determined by microscopic examination as the surgery proceeds, it is impossible to predict in advance how many stages your particular tumor will require. Your surgical team will keep you informed as the day progresses.

## **The preoperative visit**

Before surgery, you have the option to meet with Dr. Shors so that he may examine your skin cancer and discuss the procedure with you. Alternatively, one of the members of our nursing staff can discuss the procedure with you by phone.

You'll discuss any medications you are taking, whether you have a pacemaker or bleeding problem, and any other pertinent medical conditions. Be sure to ask any questions you want.

When a patient is referred for Mohs surgery, usually a biopsy (removal of a piece of tissue) has already been performed, and your surgeon will have the pathology report.

One or two more follow-up visits with the Mohs surgeon are sometime scheduled one to three months after your procedure. Regular follow-up of your skin cancer after that is ordinarily done by your referring dermatologist.

## **Avoid the sun**

Excessive sun exposure is the main cause of skin cancer. Although much of the damage to your skin was probably done during your youth, you should minimize future damage by wearing a sunscreen of SPF 30 or greater and protective clothing, including a wide-brimmed hat.

## **Anesthesia**

Mohs surgery is performed with "local anesthesia". As your procedure begins, we will use a small needle to inject a local anesthetic, usually lidocaine, around your skin cancer to numb the area. During surgery, you may feel pressure, but you should not feel pain. If more than one stage is required to remove your tumor, your skin will be anesthetized each time before the surgery. After the first stage, the injections are less painful because the skin remains partially numb.

## **Surgery**

Once your skin is numb, the Mohs surgeon will cut out a saucer-shaped piece of skin containing the visible skin cancer. Bleeding will be stopped with a machine that produces an electric current called electrocoagulation. During the electrocoagulation you will hear a buzz and may feel a sensation of heat. The medical assistant or nurse will then apply a bandage to the treated area and escort you back to the waiting room. The surgery itself usually takes only 15 to 20 minutes, but you will need to wait while your skin specimen is being processed and examined under the microscope. Often the most difficult part of the procedure is waiting for the results between stages.

The laboratory where your specimen will be examined is adjacent to the operating room. Although the size of the tumor affects the time required for tissue preparation, generally processing takes at least 30-45 minutes.

The Mohs surgeon will then look at the specimen under the microscope to determine if any tumor remains in your skin. If there is residual tumor, you will be brought back into the operating room for another stage. This procedure will be repeated until microscopic examination reveals that all the tumor is out.

The number of stages required for complete removal of tumor is from one to as many as ten or more, but the average number is two to four. Usually the tumor can be completely removed in one day, but in rare cases more than one day may be necessary.

### **Healing**

After the tumor is completely removed, your surgeon will determine what to do about the wound created by the procedure. Usually there are three choices: Let the wound heal by itself (called granulation); close the wound by bringing the edges together with sutures; or, close the wound by covering it with a skin graft or flap. Your doctor will evaluate your operative site and discuss with you the best approach for healing in your case.

### **Will I have nerve damage?**

Numbness is common and often diminishes over time. In very rare circumstances if the tumor is large and deep and is located in certain areas of the face (such as the temple), it might be necessary to cut through a nerve that controls facial muscle movement in order to completely eradicate the skin cancer. This may result in loss of muscle function, such as inability to raise the eyebrow, and the loss may be permanent. Fortunately, most tumors are not deep enough to have this effect.

### **Will I have a scar?**

Yes. Whenever part of your skin is removed, a scar will result. Sometimes a scar may be almost invisible. How visible the scar will be is dependent on several variables, including its size, location, your age, your natural ability to heal, whether you smoke cigarettes, and how the operative defect is repaired after surgery. Your surgeon's goal is to remove the tumor completely and to give you the best cosmetic result with the least visible scar. It generally takes 6 -12 months for the scar to fully heal.

### **After surgery is complete - caring for the operative site**

The initial dressing placed on the wound by the doctor or nurse is usually a bulky pressure dressing that should be left undisturbed for the first 24 hours. After that, unless you have a graft, you will change your dressing every day. Your nurse will explain to you how to care for your wound. Usually this involves cleansing it with hydrogen peroxide and/or soap & water and applying an ointment (Vaseline) and then applying a new bandage.

**Note: It is important to keep the wound covered with ointment and a dressing**

### **Pain**

You will likely have some discomfort after the anesthetic wears off (3-5 hours). Acetaminophen (Tylenol) will usually control it. If you are having more significant pain, ibuprofen can also be taken. If you have no contraindications to these medications, it is safe to take 400 mg of ibuprofen with 1000 mg of acetaminophen every 4 hours after surgery. You should limit this to three doses per day. Avoid drinking alcohol the night before surgery as well as the first 48 hours after surgery.

### **Bleeding**

Usually bleeding after surgery is minimal and appears in small amounts along the incision line. If fresh, bright red blood appears, sit or lie down, remove all of the dressings, and with gauze, place firm, steady pressure over the area that is oozing blood. Apply pressure continuously, without lifting the gauze, for a full 20 minutes. If bleeding continues, call your surgeon or go to the emergency room. Dr. Shors' phone number is (206) 251-5422 and can be used for **emergencies**. Routine questions can be answered by our clinical nursing staff Monday - Friday, 8am - 5pm. Please call (406) 314-4788.

### **Other possible post-operative complications**

Some swelling and redness around the wound is normal and will gradually disappear. Severe redness and itching may mean that you have developed an allergic reaction to the topical antibiotic ointment or a reaction to the adhesive tape. If itching and excessive redness occur, call Dr. Shors' office.

Most closures/ repairs will contain both deep sutures underneath the skin (dissolvable over 2-3 months) and a top stitch. The top stitch is usually removed between 5-7 days after surgery; often times patients can follow up closer to home for the suture removal appointment. The repair is often raised like a mountain ridge for the first two to three weeks; this often makes it appear to be lumpy or raised. The wound should gradually flatten out with time as the wound heals and matures.

All wounds normally drain clear pinkish yellow fluid-which is why regular dressing changes are so important. Infection following surgery is unusual. Signs of infection are redness, swelling, tenderness, and draining of yellow pus. If you suspect you have an infection, call Dr. Shors' office immediately.

### **Follow-up visits after surgery**

If your wound is sutured, you will usually return to our office in one week for suture removal, or if the suturing is uncomplicated, you may have your sutures removed in the office of your primary care physician. If your wound heals by granulation, a 2 – 4-week follow-up visit is usually scheduled.

### **Preparing for surgery**

On the day of surgery eat your usual breakfast and take your regular medications unless you were specifically instructed otherwise. Plan to bring someone with you if possible so that you will have company during the day. You might want to have someone available to drive you home. Bring reading material to occupy yourself during the waiting periods between stages of your surgery.

### **Medications**

Certain drugs prolong bleeding. These include aspirin and aspirin-containing drugs, some medications for arthritis called non-steroidal anti-inflammatory drugs, and anticoagulants (blood thinners) such as Coumadin (warfarin) and Plavix (clopidogrel). Examples of non-steroidal anti-inflammatory drugs are: Ibuprofen (Motrin, Advil), Indomethacin (Indocin), Sulindac (Clinoril), Tolmetin (Tolectin), Naproxen (Naprosyn), Meclofenamate (Meclomen), and Piroxicam (Feldane).

Aspirin should be discontinued when possible for 10 days prior to surgery. The physician or nurse will instruct you on whether it is advisable for you to stop aspirin. Most of the non-steroidal anti-inflammatory drugs should be stopped 24 hours prior to surgery (except Piroxicam which should be withheld for four days before surgery).

If you blood thinners Dr. Shors will decide whether to discontinue the drug before surgery. (If so, these medications are usually discontinued three days before surgery and resumed one day after.) For some patients, such as those with prosthetic heart valve for people who have had a stroke, Coumadin is usually continued at the regular dose without stopping. In almost all cases, we continue prescription anticoagulants given the risks in discontinuing these drugs.

Here are some common blood thinners:

Apixaban (Eliquis)

Dabigatran (Pradaxa)

Edoxaban (Savaysa)

Enoxaparin (Lovenox)  
Heparin  
Rivaroxaban (Xarelto)  
Warfarin (Coumadin)  
clopidogrel (Plavix)  
ticagrelor (Brilinta)  
prasugrel (Effient)  
dipyridamole  
dipyridamole/aspirin (Aggrenox)  
ticlopidine (Ticlid)  
eptifibatide (Integrilin)

**Note: Please do not drink alcohol immediately before or for 48 hours after surgery. It dilates blood vessels and may promote bleeding.**

Dr. Shors' phone number is (206) 251-5422 and can be used for emergencies. Routine questions can be answered by our clinical nursing staff Monday - Friday, 8am - 5pm. Please call (406) 314-4788.

## **INSTRUCTIONS FOR PATIENTS SCHEDULED FOR MOHS SURGERY**

1. Eat your normal breakfast the day of surgery. You may eat lunch during the day. Bring food and drink with you. No alcoholic beverages 24 hours before or after surgery.
2. If you are taking Coumadin® (warfarin), please have your anti-coagulation blood test done the week before surgery to make sure the result is within the accepted range.
3. Discontinue aspirin for 10 days before surgery unless you were instructed otherwise, or your prescribing doctor states that you should not discontinue your aspirin.
4. Discontinue any non-steroidal anti-inflammatory medications (NSAIDS) such as ibuprofen (Advil®, Motrin®) and naproxen (Naprosyn®, Aleve®) for 2 days prior to surgery. Please discontinue high dose Vitamin E and Fish oil for 10 days (regular multivitamin ok).
5. Take all your other medications on the day of surgery.
6. If an antibiotic was prescribed, take as directed on the bottle.
7. Hair grooming products, especially if they contain alcohol, may be flammable and could ignite when electric current is used to stop bleeding. Please wash your hair prior to the appointment to remove all traces of hair products.
8. Please do not wear perfume or cologne as employees and other patients may be allergic to the fragrance. When possible, remove all jewelry prior to your appointment.
9. If we are operating on your scalp, bring a scarf or a hat with you to help hold the pressure dressing in place and cover the area.
10. **Remember to plan on spending the entire day in our office. We can't predict how much time will be required for your surgery.**
11. If you have any questions, please call us at (406) 314-4788.

## **PREPARING YOUR SKIN FOR SURGERY**

Preparing your skin (also known as “prepping” your skin) before surgery with Hibiclens (chlorhexidine gluconate (CHG) solution or sponges) can lower your chances of infection at the surgical site by reducing the germs on your skin.

### *Important notes about Hibiclens:*

- To help keep your skin from getting red or irritated from Hibiclens, stop shaving or waxing at least 2 days before your surgery. It is ok to shave your face unless instructed not to by your doctor.
- Avoid getting Hibiclens in your eyes, ears, mouth or nose. If the soap gets in any of these areas, rinse well with water.
- Do not apply any lotions, moisturizers or makeup after you’ve cleansed your skin with Hibiclens.

***Please follow these instructions carefully  
for using Hibiclens Solution or sponges:***

### **The night before surgery**

- Shower or bathe your entire body from neck to your toes using Hibiclens.
- Use a clean washcloth.
- Let the soap sit on your skin for about 1 minute.
- Rinse well with clean water.
- You can wash your hair with either your regular shampoo or Hibiclens solution.
- Dry off with a freshly laundered towel.

(If you used a Hibiclens sponge, put it in the trash after your shower or bath.)

### **The morning of your surgery**

- Shower and repeat steps above.
- Wear clean clothes to the surgery center.

*Hibiclens solution or sponges can be found at Walgreens, Walmart and some pharmacies.  
Lever 2000 soap is another option; however, it is less effective.*