

## MOHS MICROGRAPHIC SURGERY: PATIENT INFORMATION

Victoria Godinez-Puig, MD, FAAD, AACMS

Dear patient:

Your doctor has referred you for Mohs surgery, a very effective treatment available for certain forms of skin cancer. Mohs surgery not only provides the highest cure rate for most primary skin cancers (approaching 99%), but also permits the best possible cosmetic result by minimizing the amount of tissue removed and providing reconstructive surgery from the hands of a skilled surgeon.

Please find enclosed your information pamphlet on Mohs Micrographic Surgery, as well as your pre-operative instructions. We hope this information will familiarize you with the Mohs procedure, and prepare you for the surgery day.

**Please review the information in this package 2 weeks before your surgery date, and make sure you follow the pre-operative instructions.** We will attempt to make your visit as pleasant and comfortable as possible.

Please feel free to call our office at any time should any questions remain unanswered after reading this pamphlet.

Sincerely,

Victoria Godinez-Puig, MD, FAAD, AACMS

## **MOHS MICROGRAPHIC SURGERY**

### ***INTRODUCTION***

This guide is intended to answer the questions most frequently asked by patients with skin cancer preparing for Mohs micrographic surgery (also known as microscopically controlled surgery) for the removal of certain forms of skin tumors. Any concerns should be fully aired and discussed prior to your date of surgery. Please remember that there is no such thing as an unimportant or silly question.

### ***WHAT IS MOHS SURGERY, AND WHY HAS MY PHYSICIAN CHOSEN THIS FORM OF TREATMENT?***

Mohs surgery was developed by Dr. Frederic E. Mohs in the 1930s as a precise method for treating certain skin cancers. Since then, many technical improvements and refinements have contributed to making Mohs surgery the most advanced, precise, and effective treatment for an increasing variety of skin cancer types.

In Mohs surgery, cancerous tissue is removed layer by layer with a high degree of precision. Each thin layer is carefully identified and mapped by the Mohs surgeon, so its exact location can be pinpointed on the wound. After careful preparation in the laboratory, the surgeon inspects each layer under the microscope. As long as cancer cells are seen, the surgeon continues to remove and examine tissue layers from that particular area of the wound. Because each layer is examined microscopically, Mohs surgery allows to trace out the entire extent of the tumor and provides the highest cure rate. In addition, because no healthy tissue is unnecessarily removed, and because your surgeon has been trained to perform reconstructive surgery (a branch of plastic surgery dedicated to reconstruction of skin defects caused by disease such as skin cancer), the best possible cosmetic results can be achieved with this technique.

### ***WHAT ARE THE INDICATIONS FOR MOHS SURGERY?***

- Skin cancers located on areas where preserving cosmetic appearance and function are important
- Skin cancers that have recurred after previous treatment or are likely to recur
- Skin cancers that are located on scar tissue
- Large skin cancers
- Skin cancers with ill-defined edges

## **WHAT ARE THE ADVANTAGES OF MOHS SURGERY?**

- Achieving the highest success rate of all treatments for skin cancer (97%)
- Examining 100% of the surgical margins under the microscope
- Minimizing the amount of healthy tissue lost
- Maximizing the functional and cosmetic outcomes
- Repairing the resulting surgical wound the same day the cancer is removed

## **WHO PERFORMS MOHS MICROGRAPHIC SURGERY?**

The American College of Mohs Surgery (ACMS) has recognized a limited number of fellowship training programs where qualified physicians, after completing 3 years of dermatology residency training and undergoing an extremely competitive selection process, receive rigorous training for 1 to 2 additional years to acquire the necessary expertise to perform the Mohs procedure.

Dr. Godinez-Puig, as a member of the ACMS and a fellowship-trained Mohs surgeon, was specifically trained to remove skin tumors while preserving healthy, unaffected surrounding skin, as well as to perform the pathologic interpretation of tissue margins on common and rare skin cancers, and to perform a wide breadth of reconstructions, ranging from simple closures to complicated multi-step repairs.

## **WHAT DOES MOHS SURGERY INVOLVE?**

- The entire procedure is performed under local anesthesia in our outpatient clinic by Dr. Godinez-Puig.
- The first part of the procedure is performed in steps or stages.
- Each step involves about 15 minutes of surgery to remove the cancerous tissue, after which you are directed to the waiting area. During this time, the tissue is prepared in the laboratory and examined under the microscope by Dr. Godinez-Puig. This process takes about 1 hour or more.
- If cancerous tissue is seen, the process above is repeated until the last microscopic examination shows no remaining cancer cells or other suspicious changes.
- The number of steps depends on the size and depth of the cancer. The first part of the procedure ends once no more cancerous tissue is seen.
- The second part of the procedure consists in repairing the surgical wound that was created by removing the skin cancer.
- Since the laboratory portion of the procedure when the tissue is prepared can be very time consuming, please be prepared to spend the entire day in the office.

## **HOW IS THE CANCER REMOVED?**

- Once the area is located, marked and cleaned, a local anesthetic (usually lidocaine with epinephrine) will be injected into the area of surgery. This is the only part of the surgery that will cause some discomfort similar to a sensation of stinging or burning. We try to inject very slowly and carefully to minimize these sensations.
- Once the area is numb, a first layer of tissue with a narrow margin around the visible tumor will be removed with a scalpel.
- Small amounts of bleeding may occur, and will be stopped with a machine that coagulates the blood vessels (commonly known as cautery), after which a temporary dressing will be applied, and you will return to the waiting room. You are permitted to have a drink or a snack while you wait.
- The tissue will be brought to the laboratory, where it will be processed by our technicians, allowing for microscopic slides to be prepared. Once obtained, the slides will be examined under the microscope by Dr. Godinez-Puig, who will take a look at the entire undersurface and edges of the specimen. This process takes about an hour, but may take longer depending on the size of the cancer and how busy the lab happens to be on that particular day.
- If microscopic examination reveals remaining tumor, it will be drawn on an existing map of your wound indicating its precise location.
- You are then brought back to the operating suite, and additional anesthetic is injected to reinforce the first injection. In most cases, the initial anesthetic has not worn off, and you will feel little or no discomfort.
- The second step involves the removal of another layer of tissue, but only where the map indicates residual cancer. The healthy tissue is left alone; only the diseased tissue is excised.
- The tissue is brought to the laboratory, and the entire process is repeated until all evident cancer is removed.
- The average tumor requires 2 to 4 steps for removal. Do not be discouraged if your cancer is not removed in one step. We are tracing the extent of the tumor very carefully while not removing uninvolved normal tissue. This must be done one small thin layer at a time.

## **WHAT HAPPENS AFTER THE CANCER IS REMOVED?**

Once the Mohs surgery is complete, there will be an open wound (also known as defect) in the area previously occupied by the skin cancer. While some patients wish to examine the wound, others are upset seeing the change in their appearance. It is important to realize that this disturbance is very temporary, as the reconstruction is a key component of Mohs surgery.

Dr. Godinez-Puig has received special training in surgical reconstruction of the face and other areas of the body. The method chosen to repair your wound will depend on its size, shape and location. Dr. Godinez-Puig will discuss the repair options with you, with attention to providing the best functional and cosmetic results.

Most often, the area will be repaired on the day of the surgery using stitches. Depending on the wound, it may be closed side by side (a technique called linear closure), or using a skin flap (skin moved into the wound from a neighboring site) or skin graft (patch of skin borrowed from another area) in order to provide the best result. In some selected cases, the wound is allowed to heal by itself without using stitches, which usually takes 4 to 12 weeks. Once the area is repaired, you will go home with a large, bulky bandage (a “pressure dressing”) that will remain in place for 24-48 hours. This helps reduce the risks of bleeding and infection.

In rare instances, if the defect is too extensive and complex to be repaired in our office under local anesthesia, we will need to arrange for you to see a plastic surgeon or other surgical specialist as required to perform the needed reconstruction. Involving a plastic surgeon may require up to two additional visits. The first visit will be a consultation and the second will be for the surgery. Depending on the schedule of the plastic surgeon, there may be a delay before they can see you for a consultation. You will therefore be required to care for the open wound for a period of time until the surgery is performed.

Most patients do not decide their healing option until the Mohs surgery is complete and the wound may be evaluated. There is always the option to consider revision of a healed wound if the cosmetic result is not entirely satisfactory.

### ***HOW DO I CARE FOR MY WOUND AFTER SURGERY?***

Most patients will have to wear a large bulky pressure dressing for 24-48 hours after the surgery. It is extremely important to keep this dressing completely dry and undisturbed for the recommended time period. Failure to do so can increase your chance of significant postoperative bleeding, which can in turn alter the initial healing process.

Once the pressure bandage is removed, it is important to care for the wound twice a day to achieve adequate healing following the detailed wound care instructions that will be provided to you on the day of the surgery. You can save time by obtaining a few items that will come in handy when taking care of your wound. Nonetheless, some of these items may also be provided to you at the end of your appointment. For a detailed list, please refer to the last page of your pre-operative instructions.

## **WILL THERE BE ANY AFTER EFFECTS FROM MY SURGERY?**

**Pain.** Discomfort, if it should occur with this procedure, is usually mild and can be managed with over-the-counter *Extra Strength Tylenol*. Do not take aspirin-containing products or medications similar to *Motrin* or *Advil* (see the pre-operative instructions in this packet for an extensive list of such medications to avoid), as these may promote bleeding and bruising, which may significantly alter initial wound healing. If unusual pain is anticipated, we will provide a prescription for a more potent pain medication.

**Bleeding.** A pressure dressing will be applied to the wound and should be left in place for 1 to 2 days to minimize swelling and bleeding. Although some minimal bleeding is typical and expected, brisk bleeding after the surgery is not very common. You should completely avoid physical activity for 2 weeks following the surgery, as well as lifting and bending for 72 hours after the surgery to prevent unnecessary bleeding and swelling and to optimize initial wound healing.

**Initial redness and bumpy appearance.** The wound may appear red and demonstrate firm, lumpy areas initially. This is absolutely normal and expected, as it is related to normal wound healing and to the suture material that was strategically placed to bring the edges of the wound, flap or graft together. Redness and bumpy appearance should gradually resolve within 12 weeks after the surgery.

**Swelling and bruising.** Swelling and bruising are very common following Mohs surgery, particularly when performed around the eye region. Surprisingly, these may continue to worsen for 3 or 4 days before they start resolving, which will take about 2 to 3 weeks in total.

**Infection.** Wound infections can occur unexpectedly, but are usually easily treated with oral antibiotics. Signs of infection may include severe, unexpected worsening redness and tenderness on the wound site, as well as fever, pus or greenish discharge, and a wound site that is very warm to touch.

**Itching and associated redness.** Itching and redness around the wound, especially in areas where adhesive tape has been applied, are not uncommon. They can be the result of local irritation or a minor allergic reaction due to the glue present in the tape. If this occurs, ask your pharmacist for a non-allergenic tape and tell us on your return visit.

**Numbness.** You may experience numbness, tingling, or unusual sensations at or near the scar. This is normal, and results from minor nerve endings being injured during surgery, and may take 6 to 12 months to improve.

**Scar.** Remember, every single wound will naturally cause the formation of a scar of some sort. Although every attempt will be made to maximize wound healing, and to minimize and hide the resulting scar, this may not always be completely possible. The extent of scarring and the appearance of the scar depends on a number of factors, all of which carry an important role. These not only include the location, size and depth of the cancer, as well as the type of repair that is ultimately performed, but also how well you adhere to the postoperative instructions, and how well your body undertakes the wound healing.

The scar can be significantly minimized by the proper care of your wound and, very importantly, by avoiding physical activity for the first 2 to 3 weeks after the surgery (this period may be longer when more complicated surgical repairs are required). We will discuss wound care in detail and give you written instructions that will explicitly outline how to take care of your wound and which activities to avoid within a particular time frame on the day of the surgery.

## PRE-OPERATIVE INSTRUCTIONS

The day spent in our clinic for Mohs surgery is long, usually lasting an average of 4 to 6 hours. Please be prepared to spend the entire day here. The actual surgery time is quite short with much of the time spent waiting for tissue processing. Boredom and fatigue are not uncommon.

There will be other patients who are getting Mohs surgery the same day as you. Some patients may be finished earlier or later than you. Every patient is unique and some patient's procedures and slides may take a longer or shorter time to complete.

### Ten days prior to the surgery:

- If you are taking aspirin, and have **NEVER** had a heart attack, arrhythmia (such as atrial fibrillation), stroke/mini stroke, blood clot of any sort, stent or prosthetic heart valve placed, or any other medical condition requiring regular intake of aspirin other than general prevention, please stop aspirin to prevent bleeding risk. **You may resume aspirin 3 days after the surgery.**
  - If you are taking aspirin and you have had a heart attack, arrhythmia (such as atrial fibrillation), stroke/mini stroke, blood clot of any sort, stent or prosthetic heart valve placed, or any other medical condition requiring regular intake of aspirin, please do **not** discontinue it.
- Please stop non-steroidal anti-inflammatory drugs (NSAIDs) such as *Excedrin*, *Advil*, *Aleve*, *Bufferin*, *Alka-Seltzer*, *Ecotrin*, ibuprofen and some cold medications, as they can make your blood thinner, which leads to a higher risk of bleeding and bruising during and after the surgery. **You may still take Tylenol for any type of pain.**
- Please stop Coenzyme Q10, vitamin E, fish oil, St John's wort and/or garlic supplements, as they all have the capacity to make your blood thinner and increase the risk of bleeding and bruising during and after the surgery. This could in turn alter wound healing.
- If you are taking *Coumadin* or warfarin, please notify the office of your recent INR. Do **not** stop your blood thinner.
- If you are taking *Eliquis*, *Pradaxa*, or *Xarelto*, please notify the office. Do **not** stop your blood thinner.
- Continue **all other** prescription medications.
- Cancel other commitments and appointments on the day of the surgery. You will spend most of the day in the office, and will want to take it easy for the next 24 hours.
- You may wish to review your personal schedule for the week or 2 following the procedure. If sutures are used, you will need to have them removed in 1 to 2 weeks. You may also have swelling or bruising that could interfere with social engagements for several weeks following the treatment.
- Ideally, you should not travel for the next 7 days after the surgery.



- If you smoke, it is imperative that you significantly reduce, or, preferably, quit smoking prior to the procedure. Smoking can severely affect wound healing. The most crucial time is two days before the procedure and one week after the surgery. Using a nicotine patch instead is a slight improvement, but not nearly as good as not smoking at all. The more you smoke, the worse your scar will look.

#### **Seventy two hours before the surgery:**

- Discontinue all alcoholic beverages, as they can make your blood thinner, which leads to a higher risk of bleeding and bruising during and after the surgery. This could in turn alter wound healing.
- You may arrange to have **one** friend or family member stay with you on the day of the surgery. Please note this person will **not** be allowed into the operating suite, but otherwise can stay with you throughout the day.
- Patients who require assistance **must** have someone to accompany them throughout the day. Please arrange this accordingly.
- We require that you do **not** drive yourself home after the surgery. If someone cannot stay with you, they must be available to pick you up once the surgery is completed. Please make sure they can be flexible with their time as we cannot be certain of your discharge time. If you do not have someone to drive you home, we may not be able to perform your surgery.
- Fill in any previously ordered prescriptions for preoperative sedatives if required.
- You may wish to pre-purchase the items needed for wound care at home after the surgery. These items are listed at the end of this document.

#### **On the day of the surgery:**

- Take all of your medications (except those listed above) on the day of the surgery.
- Bring a complete list of all of your medications on the day of surgery.
- It is very important to have a complete, healthy breakfast on the day of surgery. As you may be with us well into the afternoon, please also bring a packed lunch. We strongly advise that you do **not** skip meals on your surgical day.
- Wash your hair the night before or morning of the surgery, and use freshly laundered clothes to help reduce the chance of getting an infection. You may require to have dressings on the face that may interfere with hair washing for the first 2 days after the surgery.
- Please avoid wearing makeup if the surgery is on the face.
- Wear comfortable clothing to your appointment. Try to wear something that does not need to be pulled over your head after the surgery if you are having surgery performed on the face or neck. Please avoid wearing clothes and jewelry (earrings, necklaces) that you do not want unexpectedly stained with small droplets of blood.
- If you wear hearing aids and are having surgery around your ears, bring a container to hold them during the surgery.

- If surgery is on the face, please do not wear contact lenses. Wear glasses instead.
- If you wear dentures and surgery is to be done around the mouth area, we may need to remove them, so bring a container in which they can be stored.
- It can be helpful to bring reading materials such as a book, tablet or laptop to help pass time.
- Please be aware that physical activity will need to be restricted for a period of 2-3 weeks after the surgery to ensure proper wound healing. You will also have to avoid heavy lifting (nothing over 10 lbs), and bending over for the first 72 hours after the surgery.

**Supplies to be obtained for wound care at home after the surgery:**

1. Salt water (1 cup of boiled, bottled or distilled water + ½ tsp. salt).
2. Clean Q-tips.
3. A greasy unscented ointment such as *Vaseline Petroleum Jelly Original*, *Aquaphor* (if you have used in the past and are not allergic to lanolin), *Vaniplay Ointment* or *Cerave Healing ointment*. It is important to use generous amounts to prevent the wound from drying out.
4. Non stick gauze such as *Telfa*.
5. Non-allergic paper tape such as *Micropore* (ideally nude in color, to better dissimulate the appearance of the dressing). Try not to use plastic or cloth tape as it may be very irritating, or cause local skin allergies.

You will be given specific oral and written wound care instructions following your surgery. Exactly how you will have to take care of your wound will depend on the type of reconstruction that is ultimately performed.