

MOHS MICROGRAPHIC SURGERY

SKIN CANCER

Skin Cancer is by far the most common malignant tumor in humans. The most common types of skin cancer are basal cell carcinoma, squamous cell carcinoma, and *melanoma*. Both basal cell carcinoma and squamous cell carcinoma begin as a single point in the upper layers of the skin and slowly enlarge, spreading both along the surface and downward. These extensions cannot always be directly seen. The tumor often extends far beyond what is visible on the surface of the skin. If not completely removed, both types of skin cancer may invade and destroy structures in their path. Although these skin cancers are locally destructive, they do not tend to metastasize (spread) to distant parts of the body. Metastasis of basal cell carcinoma is extremely rare and usually occurs only in the setting of long-standing large tumors where the patient's immune system is compromised. Squamous cell carcinoma is slightly more dangerous, and patients must be observed for any spread of the tumor. Such spread is still infrequent. Melanoma is a very different and more dangerous kind of skin cancer and is occasionally treated with Mohs Micrographic Surgery.

Excessive exposure to sunlight is the single most important factor associated with the development of skin cancers. In addition, the tendency to develop these cancers appears to be hereditary in certain ethnic groups, especially those with fair complexions and poor tanning abilities. Fair-skinned people develop skin cancers more frequently than dark-skinned people, and the more sun exposure they receive, the more likely they are to develop a skin cancer. Other factors, including exposure to radiation, trauma and exposure to certain chemicals, may also be involved in the development of skin cancers.

The vast majority of skin cancers are present for more than a year before being diagnosed and their growth is rather slow. Skin cancers may be more aggressive in certain instances: patients whose immune system is compromised, patients with a medical history of leukemia or lymphoma, and cancers in certain locations such as the ear, lips, lower nose, or around the eyes.

***Mohs surgery is performed
in our Ahwatukee office only.***

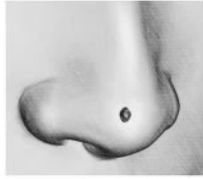
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There are five standard methods for the treatment of skin cancers. The two nonsurgical treatments are cryotherapy (deep freezing) and radiation therapy. The three surgical methods include simple excision, physical destruction (curettage with electrodesiccation) and Mohs micrographic surgery. Newer methods under investigation include photodynamic therapy and immunochemotherapy.

In the past, Mohs Micrographic Surgery was sometimes called chemosurgery or Mohs chemosurgery. Originally, chemicals were applied to the skin during the surgery and hence, the name chemosurgery. Chemicals are now rarely used, but the name chemosurgery continues to be associated with the procedure.

After the removal of the visible portion of the tumor by excision or curettage (debulking), there are two basic steps to each Mohs Micrographic Surgery stage. First, a thin layer of tissue is surgically excised from the base of the site. This layer is generally only 1-2 mm larger than the clinical tumor. Next, this tissue is processed in a unique manner and examined underneath the microscope. On the microscopic slides, Dr. Hernandez examines the entire bottom surface and outside edges of the tissue. (This differs from the "frozen sections" prepared in a hospital setting which, in fact, represent only a tiny sampling of the tumor margins.) This tissue has been marked to orient top to bottom and left to right. If any tumor is seen during the microscopic examination, its location is established, and a thin layer of additional tissue is excised from the involved area. The microscopic examination is then repeated. The entire process is repeated until no tumor is found.

Mohs Micrographic Surgery allows for the selective removal of the skin cancer with the preservation of as much of the surrounding normal tissue as is possible. Because of this complete systematic microscopic search for the "roots" of the skin cancer Mohs Micrographic Surgery offers ***the highest chance for complete removal of the cancer while sparing the normal tissue.*** The cure rate for new skin cancers exceeds 97%. As a result, Mohs Micrographic Surgery is very useful for tumors with indistinct borders, tumors near vital functional or cosmetic structures, and tumors for which other forms of therapy have failed. No surgeon or technique can guarantee 100% chance of cure.



An injection numbs the area. The visible portion of the tumor is debulked. A thin layer of tissue is excised from the surrounding skin and base. The removed tissue is mapped and sectioned.

The deep and peripheral margins of each section are thinly sliced with a microtome and mounted on microscope slides for examination.

If additional tumor is found, it is located on the map, marked and a subsequent layer is removed. The examination/removal process continues until no tumor is found.

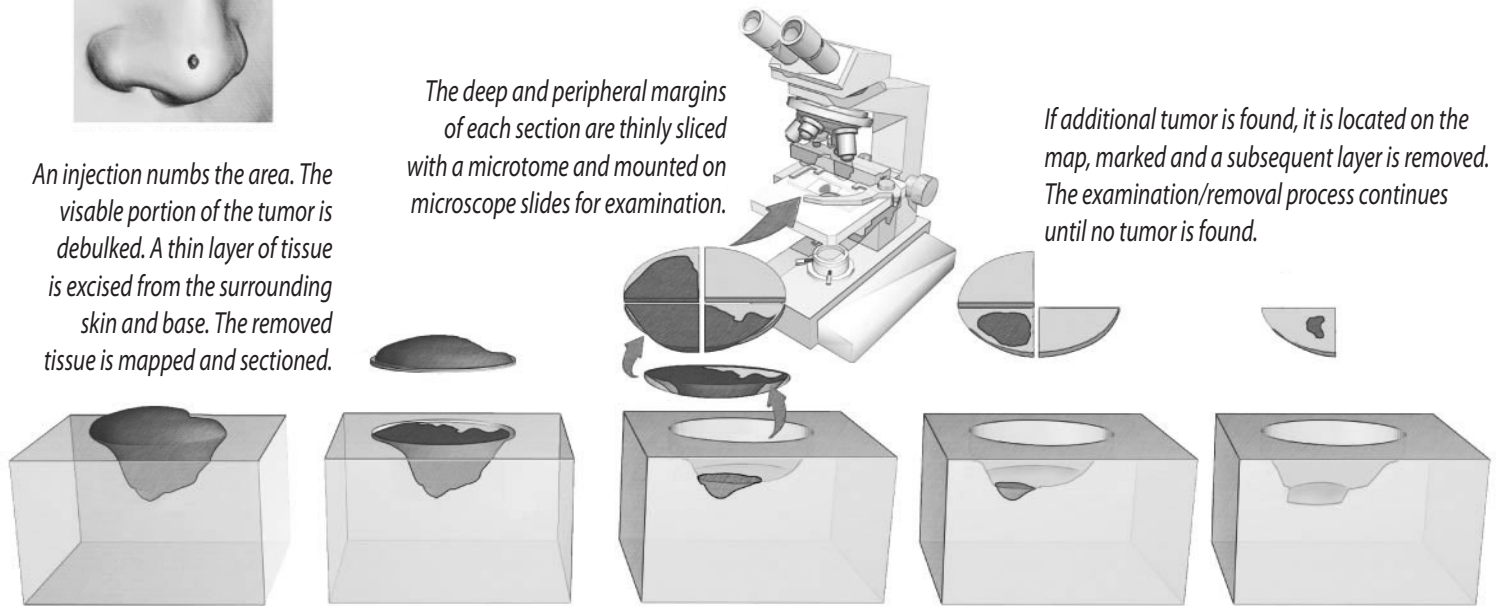


ILLUSTRATION BY ERIN MOORE

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PREOPERATIVE VISIT

A preoperative consultation is preferred. It gives you an opportunity to meet Dr. Hernandez and his staff and become acquainted with the office location and facilities. It allows Dr. Hernandez to assess the tumor and develop a proposed reconstruction plan. This is important with managed care plans, where prior authorization for the procedures is usually required. We will review your medications at this point. If you take Coumadin or blood pressure medications or if you normally take an antibiotic prior to dental work, please bring this to our attention so that there is no delay in your surgery. Also please bring a complete list of all of your medications, vitamins, and herbal supplements with you the day of consult.

BEFORE MOHS MICROGRAPHIC SURGERY

Be well rested and eat a good breakfast. Take your usual medications, unless directed otherwise. **We request that you do not take any aspirin or aspirin containing products, such as Anacin or Bufferin, for ten days prior to the surgery.** In addition, please do not take Ibuprofen (Motrin, Advil, etc.). These medications may "thin" your blood and cause more bleeding. You may substitute acetaminophen (Tylenol) if required. Do not drink any alcoholic beverages for 5 days before surgery.

Shampoo your hair the night before surgery, as your wound and initial dressing will have to remain dry for 24 hours thereafter.

The length of the procedure varies depending on the size and location of the skin cancer and the type of reconstruction to be done. Although the average length of time is 4-5 hours, you should plan on spending much of the day in our office.

We ask that you limit the number of people accompanying you to one and that the one person be over the age of 16. There is plenty of time spent waiting for the lab work, so bring a book or handiwork to keep busy.

THE DAY OF SURGERY

Appointments for surgery are scheduled throughout the day. It is a good idea to wear loose fitting clothing and avoid "pullover" clothing. Also, if the operative site is on the face, please do not wear makeup on or around the area. We will obtain your written consent for the procedure, photographs will be taken, and your blood pressure will be recorded. If you have any additional questions, please feel free to ask them at this time.

The doctor or a nursing staff member will then anesthetize (numb) the area of skin containing the cancer by a small local injection, then the area surrounding the skin cancer will be cleansed with an antibacterial soap. This injection will probably be similar to the one you received for your biopsy. We will be as gentle as we can when administering this. It usually takes 15-20 minutes to anesthetize the involved area and remove the tissue. After the tissue has been removed, it will be processed in our office laboratory.

Depending upon the amount of tissue removed, processing usually takes an additional 1 to 1 1/2 hours. Your wound will be bandaged, and you will move to the patient lounge while the tissue is processed, stained, and examined by Dr. Hernandez. If the microscopic examination of the removed tissue reveals the presence of additional tumor, we will go back and remove more tissue. The Mohs technique allows us to precisely map out where the roots of the cancer remain. Most skin cancers are removed in 1-3 surgical stages.

RECONSTRUCTION

After the skin cancer has been completely removed, a decision is made on the best method for closing the wound created by the removal. There is no way to predict how wide, deep or large the wound is going to be until the tumor has been completely removed. Some methods include letting the wound heal by itself (2nd intention) or through enhanced wound healing methods, closing the wound in a side to side fashion with stitches, or closing the wound with a flap or graft. The best method for wound closure is determined on an individual basis after the size, shape and depth of the final defect is known.

The best method of closure could involve using the expertise of other surgical specialists for the *reconstruction stage* of the surgery (**multi-specialty approach**) in situations where using their unique reconstruction skills will result in a considerable benefit to the patient. The need or preference for this approach is usually determined prior to surgery. The reconstruction may take place the same day of the removal stage or several days later (**delayed closure**). Our office will coordinate with the surgical specialists' office the time and date of the *removal stage* and the reconstruction stage of the Mohs procedure. Both stages are covered by insurance. The multi-specialty approach is most commonly used in breast cancer surgery and is fast becoming commonplace in Mohs surgery.

AFTER MOHS MICROGRAPHIC SURGERY

Your surgical wound will require care during the weeks following surgery. Detailed written instructions will be provided. You should plan on wearing a bandage and avoiding strenuous physical activity for a week. Most of our patients report minimal pain which responds readily to Tylenol. You may experience a sensation of tightness across the area of surgery. Skin cancers frequently involve nerves and months may pass before your skin sensation returns to normal. In rare instances, the numbness may be permanent. You may also experience itching after your wound has healed. Complete healing of the surgical scar takes place over 12-18 months. Especially during the first few months, the site may feel "thick," swollen, or lumpy, and there may be some redness. Gentle massage of the area (starting about 2-3 weeks after the surgery) will speed the healing process.

A follow-up period of observation is necessary after the wound has healed. Studies have also shown that once you develop a skin cancer, there is a strong possibility of developing other skin cancers in the future. Should you notice any suspicious areas, it is best to check with your physician for a complete evaluation. You will be reminded to return to your dermatologist on a frequent basis for continued surveillance of your skin.

RISKS OF MOHS MICROGRAPHIC SURGERY

Because each patient is unique, it is impossible to discuss all the possible complications and risks in this format. The usual risks are discussed below. Dr. Hernandez will discuss any additional problems associated with your particular case. *It is important to understand that these occurrences are the exception and not the rule.*

- The defect created by the removal of the skin cancer may be larger than anticipated. There is no way to predict prior to surgery the exact size of the final defect.
- *There will be a scar* at the site of the removal. We will make every effort to obtain optimal cosmetic results, but our primary goal is to remove the entire tumor. Again, Mohs surgery will leave you with the *smallest wound* thus creating the best opportunity for optimal cosmetic results.
- There may be poor wound healing. At times, despite our best efforts, for various reasons (such as bleeding, poor physical condition, smoking, diabetes, or other diseases), healing is slow or the wound may reopen. Flaps and grafts utilized to repair the defect may at times fail. Under these circumstances, the wound will usually be left to heal on its own.
- There may be a loss of motor (muscle) or sensory (feeling) nerve function. **Rarely**, the tumor invades nerve fibers. When this is the case, the nerves must be removed along with the tumor. Prior to your surgery, the doctor will discuss with you any major nerves which might be near your tumor.
- The tumor may involve an important structure. Many are near or on vital structures such as the eyelids, nose or lips. If the tumor involves these structures, portions of them may have to be removed with resulting cosmetic or functional deformities. Furthermore, repairing the resulting defect may involve some of these structures.
- **Rarely**, wounds become infected (fewer than 1 %) and require antibiotic treatment. If you are at particular risk for infection, you may be given an antibiotic prior to surgery.
- There may be excessive bleeding from the wound. Such bleeding can usually be controlled during surgery. There may also be bleeding after surgery. We have never had a significant amount of blood loss, but bleeding into a sutured graft or flap may inhibit good wound healing.
- There may be an adverse reaction to medications used. We will carefully screen you for any history of problems with medications; however, new reactions to medications may occur.



JULIO HERNANDEZ, MD

Dr. Hernandez was born and raised in Puerto Rico. He studied medicine at the University of Puerto Rico School of Medicine, followed by a one year internship in internal medicine in Pittsburgh, Pennsylvania. He completed a three year Dermatology residency at the University of Puerto Rico in 1984 and became board certified by the American Board of Dermatology that same year. He taught Dermatological surgery as an Assistant Clinical Professor in the Department of Dermatology at the University of Puerto Rico until 1987. He moved to New Orleans, Louisiana, where he obtained additional training in Dermatological surgery, which included fellowship training in Dermatological cosmetic surgery, Mohs Micrographic Surgery and Dermatological Laser Surgery.

He practiced in New Orleans for nine years. He taught Dermatologic and reconstructive surgery after skin cancer removal to residents and fellows. Dr. Hernandez has been practicing Dermatology for over 30 years, performed over 10,000 Mohs cases, has been a faculty member in multiple national and international dermatology meetings. He has been an author of several chapters in medical textbooks. In addition to Mohs surgery, he has expertise in the areas of facial reconstruction after skin cancer removal, using cosmetic surgery techniques.

In 1984 Dr. Hernandez was privileged to meet Dr. Frederic Mohs and spent two days at his Mohs Clinic in Madison, Wisconsin. Besides being a family man and physician, Dr. Hernandez is an avid photographer, runs 5K and half-marathons, played Latin percussion instruments for a band in New Orleans, and is a private pilot.



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