

CALIFORNIA SKIN INSTITUTE

MOHS SURGERY INFORMATION SHEET

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PLEASE NOTE: THIS INFORMATION SHEET; A REGISTRATION FORM FOR NEW PATIENTS; BEFORE AND AFTER PHOTOS OF ADVANCED FACIAL RECONSTRUCTION; AND ADDITIONAL RESOURCES CAN BE FOUND AT: www.CASkin.com.

You are waiting to undergo an advanced skin cancer removal procedure called Mohs Micrographic Surgery. The origin of this technique dates back to the 1930's when Dr. Frederick Mohs at The University of Wisconsin was researching a way to remove complicated skin cancers unresponsive to traditional therapies such as standard excisional surgery, cryosurgery (freezing), electrodesiccation and curettage (scraping and burning), and radiation therapy. In the 21st Century, Mohs Micrographic Surgery represents the state-of-the-art treatment for skin cancer by providing the highest cure rate, minimal sacrifice of normal skin, and smallest possible scar.

The American College of Mohs Micrographic Surgery and Cutaneous Oncology (www.mohscollege.org) is the official organization responsible for training Mohs surgeons and maintaining the standard-of-care in the specialty of Mohs Surgery. To become a member of this organization and be known as a Mohs surgeon, a special one to two-year fellowship following a dermatology residency is required. Only a limited number of dermatologists are trained each year to be Mohs surgeons to maintain the highest level of competence in the specialty. There are approximately two-dozen official Mohs surgeons in the Bay Area. Make sure that your Mohs surgeon is fellowship-trained and a member of the "Mohs College".



Greg S. Morganroth, MD is one of a handful of **board certified**, fellowship-trained dermatologic surgeons in the Bay Area specializing in all aspects of surgical and cosmetic dermatology. He is a native of suburban Detroit, Michigan and was an undergraduate at The University of Michigan. After receiving his M.D. *cum laude* from the University of Michigan School of Medicine in 1990, he completed an internship at the

University of Pennsylvania. During his dermatology residency at Yale University, his training focused on the advanced surgical management of skin disorders including skin cancer surgery, laser surgery, and reconstruction. After completing his training at Yale in 1994, he was one of ~35 dermatologists worldwide to begin a dermatologic surgery fellowship emphasizing Mohs surgery for skin cancer, facial reconstruction, laser surgery, and the management of sun damaged skin. During this intensive surgical fellowship completed in 1995 at the Skin and Mohs Surgery Center, Baptist Medical Center and Hunkeler Eye Clinic in Kansas City, Missouri, he performed over 800 Mohs surgery and reconstruction cases for facial skin cancer in addition to participation in hundreds of cosmetic, laser and facial and eyelid rejuvenation procedures. Dr. Morganroth was awarded a Mohs fellowship training program in 2004 and is one of 75 Mohs fellowship directors in the world. His fellows spend one year training in his techniques and have all graduated to work in academic centers including Oregon Health and Science University in Portland, Oregon and The University of Connecticut Medical Center and in private practices in Pennsylvania, Southern California, and Texas.

Dr. Morganroth is a Fellow of the American College of Mohs Micrographic Surgery and Cutaneous Oncology, American Society of Dermatologic Surgery, and the American Academy of Dermatology. He has published numerous book chapters and many clinical and research articles in medical journals including: *The New England Journal of Medicine*; *Clinics in Plastic Surgery*; *Journal of the American Academy of Dermatology*; *Archives of Dermatology*, and *Journal of Investigative Dermatology*. He has presented his original research at the annual meetings of the American Academy of Dermatology, Society for Investigative Dermatology, and New England Dermatological Society, lectured multiple times in various departments at Stanford and UCSF.

He is an expert in skin surgery and skin cancer and receives hundreds of referrals a year from dermatologists around the Bay Area for their patients in need of specialized skin surgery. The evaluation and treatment of sun damage and skin cancer including Mohs Surgery is the largest component of his practice. Over the past fourteen years alone, he has performed more than 16,000 Mohs procedures.

Dr. Morganroth is also nationally recognized for his innovative techniques in local anesthesia cosmetic surgery. He has performed thousands of neck and body liposuction, laser resurfacing, face lifts, neck lifts, chin implants and eyelid rejuvenation procedures with local anesthesia. The hallmark of his techniques are natural results, minimal downtime, and the utmost in safety. Examples of his results can be found at www.CAskin.com.

What You Should Know About Your Options For Skin Cancer Surgery

Your physician has referred you for Mohs Surgery because your skin cancer falls into the complicated skin cancer category and requires special treatment.

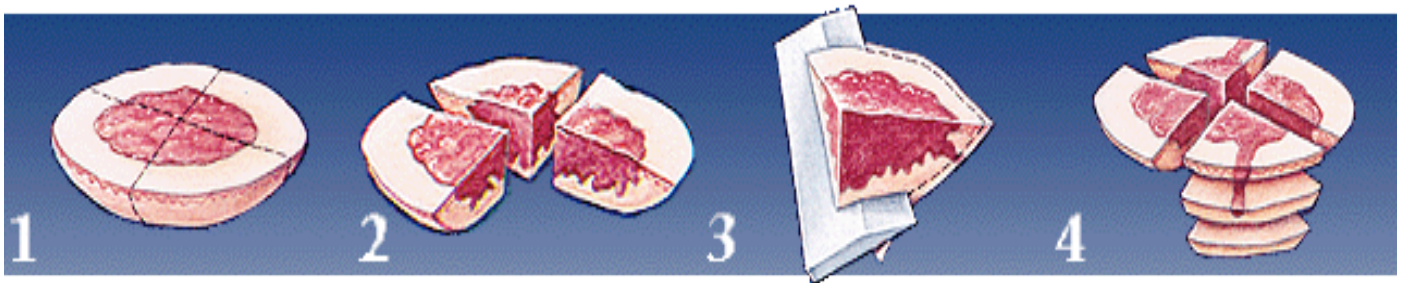
COMPLICATED SKIN CANCERS

Location in cosmetically sensitive areas (nose, lip, eyelid, ear)
 Recurrent (previously treated, then came back)
 Large or Incompletely removed by another procedure
 Aggressive growth pattern on microscopic examination
 History of multiple skin cancers in the same area
 Poorly demarcated tumors (unable to see borders)

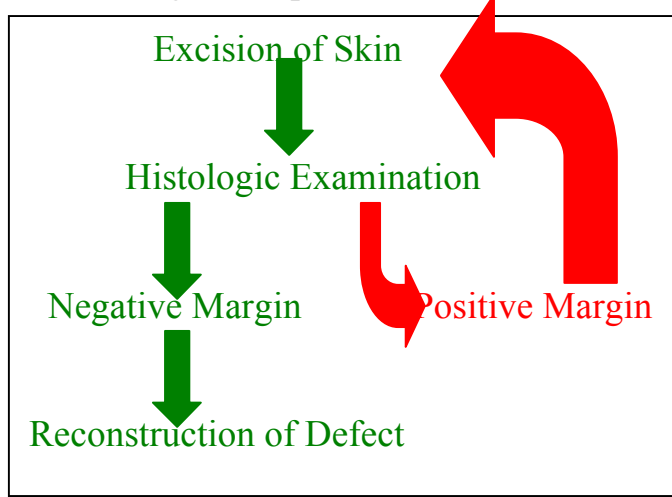
Several effective methods are available for the treatment of skin cancer. The treatment choice is dependent on several factors including size, previous treatment, location, and tumor type. Mohs Surgery is indicated for complicated tumors and provides the **highest cure rate** for both primary (first time) cancers of **greater than 99%** and recurrent (previously treated but then came back) cancers of **greater than 95%**.

Basics of Mohs Surgery--How It Works

Mohs Surgery is a complex procedure combining surgical excision with immediate microscopic examination of the entire tissue specimen margin by frozen tissue processing techniques right in the office while you wait. In addition to Dr. Morganroth, who serves as the Mohs surgeon and pathologist, two histotechnologists are employed to process, cut, and stain the tissue specimen for proper histologic study. Mohs surgery consists of four steps:



1. Numbing the skin with a local anesthetic called Lidocaine followed by surgical removal of a thin layer of skin containing the tumor in the shape of a pie.
2. Dividing the pie-like specimen into slices that are numbered, mapped, color-coded, and frozen.
3. Frozen tissue slices are then sectioned and stained in our Mohs lab contained entirely within the office by our own staff of four histotechnicians.
4. Examination by Dr. Morganroth of each section under the microscope as if looking at the entire “crust of the pie” to determine if the entire tumor has been removed. The “filling of the pie” or center of the tissue specimen is not examined because the



tumor has already been diagnosed by the prior biopsy and the center of the specimen is not helpful for margin control. If the tumor is removed completely, the skin defect is ready to be repaired. If the specimen is positive for residual tumor, steps 1 through 4 are repeated until the skin is clear of tumor (see diagram).

The Mohs Surgery technique allows Dr. Morganroth to examine 100% of the surgical margin (or “pie crust”) and, if tumor is still present, pinpoint the exact location of the residual cancer. This enables him to return to the treatment area and selectively remove another layer of skin from the positive area only. This minimizes the amount of normal skin that is removed and therefore creates the smallest possible defect in the skin. Guessing the location of residual tumor in the skin is completely eliminated with Mohs Surgery. Since many of the skin cancers removed with Mohs Surgery are complicated, multiple stages are often required to clear the tumor. **Please be patient!!!** Examination of each of your stages takes **up to 60 minutes**. If multiple stages are taken, the Mohs procedure can take up a good percentage of the day. Usually you have been warned if a prolonged procedure is anticipated. The vast majority of this time will be spent sitting in the waiting room watching television or reading a book or magazine.

In summary, the use of Mohs Surgery significantly increases the chance of complete cure and reduces the unnecessary sacrifice of surrounding normal skin. This minimizes the size of the hole, makes it easier to repair the defect, and will result in a smaller scar.

ADVANTAGES OF MOHS MICROGRAPHIC SURGERY

Procedure performed from start to finish by a skin cancer expert
 Highest cure rate available for skin cancer
 Visualizes 100% of margin of excision vs. 1% with normal pathology
 Smallest amount of normal skin is removed
 Preserves cosmetics and function of treated area
 Smallest possible defect results in smallest possible scar
 Surgery and microscopic examination by the same person
 Reconstruction performed immediately after tumor removed
 All done under local anesthesia outside of the hospital

Other Acceptable Treatments For Skin Cancer That Have Lower Cure Rates Include:

Excisional Surgery: This is the most common technique for skin cancer treatment used by plastic surgeons, dermatologists, and other doctors who are not performing Mohs Surgery. This approach involves the surgical removal of the cancer and a surrounding border of normal skin. The amount of normal skin removed is determined by the surgeon based on clinical judgment and is typically significantly greater than that removed during Mohs surgery. The excision involves a larger removal of normal skin because:

1. The surgeon wants to remove all of the tumor on the first try
2. Immediate tissue examination is usually not available and the microscopic tissue examination process is less accurate

In excisional surgery, the tissue is sent for traditional histologic processing by a pathologist not directly involved in the surgical excision. The results are typically received within one week, although traditional frozen sections may be done at the time of surgery if the surgery is performed in the hospital. In either case, the tissue is handled much differently than the Mohs lab. The tissue is cut into a few representative sections to be stained and examined beneath the microscope. However unlike Mohs processing, **less than 1%** of the true surgical margin is examined (**Mohs Surgery evaluates 100%** of the true surgical margin). If the pathologist examines the tissue

(representing less than 1% of the actual margin) and does not see any tumor at the edge of these sections, it is assumed that the tumor is completely removed in the other 99% of the tissue. Obviously, residual tumor “tentacles” can be missed with this traditional approach since the vast majority of the margin is not examined. As a result, surgical excision without the histologic processing of Mohs Surgery has a higher tumor recurrence rate. If residual tumor is noted on the pathologist’s examination, it is difficult for him/her to communicate the exact location to the surgeon because mapping is not performed. This results in additional skin removal that may be inaccurate and excessive.

Electrodesiccation and curettage: the cancer is scraped away and the remaining tissue is burned with an electric needle repetitively. This wound is left to heal on its own over a period of weeks. The recurrence rate for tumors on the face is higher than excision or Mohs surgery. This is primarily due to the lack of a tissue pathology specimen for margin evaluation. Scar result is poor to excellent depending on the area.

Radiation therapy: radiation is used to destroy the skin cancer and a margin of surrounding normal skin. Advantages include acceptable cure rate, painless procedure, and a good procedure for elderly patients who are not surgical candidates. Disadvantages include multiple visits to the hospital (usually greater than 10), lack of pathology specimen for examination, treatment of larger areas than the tumor alone, lower cure rate, radiation damage to the surrounding skin, and long term radiation side effects including thinning, color changes, and skin cancer.

Cryosurgery: liquid nitrogen, a very cold substance, is used to create freeze damage to the area of skin. The procedure takes minutes, however has a lower cure rate, no pathology specimen, creates a wound that takes weeks to heal, and has variable scarring results. I do not recommend cryosurgery for the treatment of skin cancer.

New topical treatments: many new topical drugs are undergoing evaluation for the treatment of skin cancer. At this time, some topical creams have shown some promise for treating superficial skin cancers off of the face. They are not FDA-approved for the treatment of skin cancer and the cure rate is lower than Mohs surgery or excision. They have not been studied in the treatment of complicated skin cancers.

Reconstruction of the Mohs Micrographic Surgery Defect

When the final stage of Mohs Micrographic Surgery is found to be free of tumor, your skin cancer has been removed with a 99% cure rate for primary tumors and over 95% for recurrent tumors (previously treated but then came back). You are left with a skin defect that has clean margins (free of skin cancer). The Mohs Micrographic Surgery phase of your procedure is completed.

The next phase of your procedure is the skin reconstruction. The reconstruction phase is where Mohs surgeons and other reconstructive surgeons can differ significantly in their approach and final results. Dr. Morganroth and his team are experts at skin reconstruction and will utilize highly advanced reconstruction techniques to provide a natural cosmetic result with minimal visible scarring. Examples of his approach are available on <http://www.CAskin.com>.

How To Prepare For Your Surgery

1. Do not take any aspirin or aspirin-containing products for at least 3 weeks prior to your surgery. Aspirin thins the blood. Also, do not take other anti-inflammatory pills, headache and cold remedies, or Alka-Seltzer. If your physician recommended that you take the aspirin, please check with him/her before stopping your medication. Please take Tylenol for a headache or pain. In addition, if you take high doses of Vitamin E, please stop it at least 14 days before the procedure. Coumadin, **only if your doctor approves**, should be discontinued 3 days before surgery.
2. If you require antibiotic prophylaxis before dental procedures or other surgery, take your first dose of antibiotics 1 hour before coming to the office for your Mohs surgery. If you do not have a prescription at home, be sure to call us at least 3 days in advance of your surgery date so that a pharmacy can be called.
3. If your skin cancer is located in the center of your face, eyelid, or eyebrow area where a bandage will block your vision or impact your ability to wear glasses, please have someone available to drive you to and from the office. Because of limited space, you may have one family member wait with you on the day of surgery. This will help to ensure your comfort as well as that of the other patients having surgery on the same day.

4. Eat a normal breakfast or lunch on the day of surgery. If you wish to bring your own lunch or snacks, we have refrigerator space available for you.
5. Please wear comfortable clothing. Make sure that your shirt buttons in the front and does not slip over your head. No one-piece outfits.
6. Please take a shower and wash your hair on the morning of the day of surgery. Do not apply makeup (if the skin cancer is on your face), perfume, aftershave, or cologne.
7. Take all of your routine medications, as you normally would **EXCEPT any of your medications that we have told you to stop** (i.e. aspirin or Coumadin).
8. If you are unable to keep the scheduled appointment for surgery, please contact our office at least 48 hours in advance to reschedule your surgery appointment.

What To Expect On The Day Of Surgery

After you arrive in the office, one of our nurses will greet you and take you to the treatment room where the Mohs procedure will be performed. They will take your blood pressure and ask about your medications and allergies.

One of the physicians will be in to greet you before the start of the procedure and answer any last minute questions. Please let us know if there is anything we can do to make you feel more comfortable (i.e. change the chair position, etc.).

First, the doctor will use a small needle to inject a local anesthetic (Lidocaine) to numb the skin. This feels like a bee sting and lasts only a few seconds. This is the only part of the procedure that is uncomfortable. The numbing medication lasts a few hours, however if additional injections are needed later, these are usually painless or much less painful.

After the area is numb, the doctor will remove a thin layer of skin affected by the cancer. This is called Stage I and represents the first layer of skin that is mapped, divided, and color-coded. After Stage I is removed, an electric needle is used to stop any bleeding. The wound is bandaged with gauze and you will return to the waiting room or stay in the procedure room. While you are waiting, ask for coffee, read a book or magazine, or chat with other patients. Over the next hour or so, Dr. Morganroth and

the histotechnologists are busy processing the tissue and examining the stained tissue sections with the microscope. Please be patient since this technique requires meticulous care.

If the microscopic examination reveals that there is still skin cancer behind, the doctor will repeat the procedure as soon as possible. This second layer is called Stage II. Because Stage I was divided, numbered, and color-coded, the doctor can determine exactly where residual skin cancer is left behind. Stage II will consist of a layer of skin that corresponds to the map created from Stage I. Therefore, additional tissue is removed only from those areas still affected by skin cancer. The average number of removals required is two to three stages. Fortunately the Mohs procedure can be completed typically in less than a half-day and is on an outpatient basis.

Once Dr. Morganroth and his team are confident that the skin cancer has been completely removed, they will discuss the options to repair the wound. Most often the wound can be closed in a linear fashion with stitches. This turns the circular hole in the skin into a fine straight line (scar). In other cases, a more complex procedure known as a flap or graft may be required to provide the best possible cosmetic result. This decision will depend on the wound size, depth, and location. If the wound is stitched up, the stitches are removed typically one week later.

Wound Care Instructions AFTER Mohs Micrographic Surgery

This instruction sheet is designed to help you care for your surgical wound following Mohs Surgery and any reconstruction of your skin defect.

Supplies that need to be purchased prior to surgery for wound care include:

•Polysporin antibiotic ointment •Telfa dressing •Paper tape

All of these items are over-the-counter and are available in drug stores and pharmacies.

Wound Care

1. Keep the post-operative bandage in place until showering the next morning.
2. Before showering, remove the bandage and discard it the trash.
3. Cleanse your incision with soap & water (not hydrogen peroxide) to remove any drainage and crusting.
4. Pat the wound dry and apply a generous layer of Polysporin ointment to the incision.
5. Cover the Polysporin with a Telfa dressing cut into the shape of the wound.
6. Tape the Telfa dressing in place with paper tape.

7. Continue this wound care once daily until you return for suture removal.

Prescription Medications

1. Continue your regular medications as you normally would.
2. Restart your aspirin, aspirin-containing products, Coumadin, and Vitamin E (these were stopped before surgery) on the day after surgery.
3. In the first 24 hours after surgery, take TYLENOL, not aspirin, for pain.

Activity Level Following Surgery

1. Spend the first day post-surgery relaxing.
2. Keep your head elevated during the first few evenings with a couple of pillows.
3. If the surgery was performed on the eyebrow, eyelid, cheek, forehead, top of nose, or scalp, gravity may result in swelling moving to the eye area causing “black eyes” approximately 1-2 days after surgery. Apply ice packs during the first 48 hours to minimize swelling. This eye swelling will resolve over a few days.
4. Heavy lifting and exercise are not allowed until after the sutures are removed.
5. Showering can be started the morning after surgery. Bathing is allowed if the incision site is not soaked for more than one minute at a time. Pat the wound dry after leaving the shower and reapply the polysporin and bandage. Swimming is not allowed until after the sutures are removed.

The doctors are available 24 hours per day by calling (650) 969-5600. Be sure to identify yourself as a MOHS SURGERY PATIENT to the page operator.

CONTACT US IMMEDIATELY IF:

1. **Bleeding saturates your dressing (some spotting of the dressing is expected). If excessive bleeding occurs, remove the dressing and hold direct pressure on the wound with gauze for 20 minutes continuously. Call me if the wound still bleeds.**
2. **If you have persistent pain that is getting worse instead of better with time.**
3. **If the wound appears infected. This includes a bright red color of surrounding skin, swelling, pus, foul-smelling drainage, or pain.**

