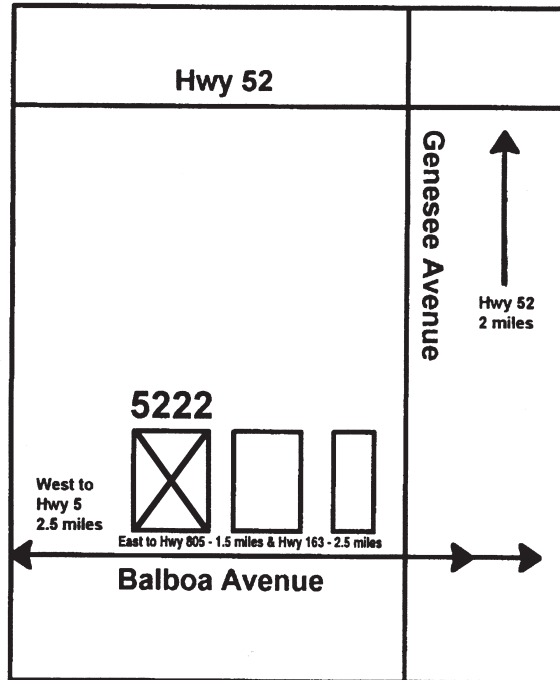


# MOHS SURGERY



## **Ken Gross, M.D.**

5222 Balboa Avenue, 6th Floor  
San Diego, CA 92117  
(858) 292-5101  
(858) 292-1915 FAX  
[www.skisurgerymed.com](http://www.skisurgerymed.com)

*Skin Surgery  
Medical Group Inc.*

## A PATIENT'S GUIDE TO MOHS SURGERY

**Kenneth G. Gross, M.D.**  
Dermatologic Surgeon

# MOHS SURGERY

Center (S.U.N.Y.). He completed his internship at Los Angeles County General Hospital. Following his dermatology training at Balboa Naval Hospital in San Diego, Dr. Gross remained on the Dermatology teaching staff for an additional six years. At the time Dr. Gross left the Navy, he was head of dermatology training and director of the Regional Comprehensive Melanoma Clinic. Dr. Gross was a Navy Flight Surgeon as well as a Navy diver. He retired as a Navy Captain.

Dr. Gross founded and was the first president of the *San Diego Society for Dermatologic Surgery*. Dr. Gross is also a fellow of the *American Society for Mohs Surgery* (ASMS) and was President of the organization in 1995. Dr. Gross co-directs the *American Society for Mohs Surgery's* international course "Fundamentals of Mohs Surgery."

Dr. Gross was certified as a diplomate of the *American Board of Dermatology* in 1977. He is presently Clinical Professor of Medicine non-salaried (Division of Dermatology) at the School of Medicine, University of California, San Diego. He is dermatology-surgery (Mohs surgery) attending at the Veterans Administration Hospital in La Jolla. He is cofounder of the Clairemont Branch of the *American Cancer Society* (now called the "Metro League"). Dr. Gross is on staff at Mercy Hospital, University Hospital, and Veterans Administration Hospital.

Dr. Gross is co-author of the book: *Fundamentals of Mohs Surgery*, published by Mosby and now in its second printing.

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Dr. Gross is a member of the following professional organizations:

- \*\* Fellow: American Society for Mohs Surgery
- Fellow: American Academy of Dermatology
- Fellow: American Academy of Facial Plastic and Reconstructive Surgery
- Fellow: American Society for Dermatologic Surgery
- Fellow: American Society of Cosmetic Surgery

American Society for Laser Medicine and Surgery

\*\* San Diego Society for Dermatological Surgery

\*\* San Diego Dermatologic Society

San Diego County Medical Society

California Medical Association

American Medical Association (AMA)

\*\* past president

Dr. Gross speaks at many local and regional conferences. His special areas of expertise are: dermatologic surgery, laser surgery, skin cancer (basal, squamous, and melanoma), precancers and non-cancerous skin growths (including congenital nevi and melanoma), tattoo removal, and the treatment of the aging changes of the skin.

Dr. Gross is a diplomate of the following boards: the *American Board of Dermatology*; the *American Board of Laser Surgery*; the *American Board of Cosmetic Surgery*. Dr. Gross attended Rutgers University from 1961 to 1964; he graduated in 1968 from Downstate Medical

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# MOHS SURGERY

## Introduction

Mohs micrographic surgery is a specialized procedure for the removal of skin cancer. The procedure is named for the originator of the technique, Dr. Frederick Mohs. This booklet was written to help you understand what Mohs micrographic surgery is and why it is recommended for the treatment of skin cancer.

Ken Gross, M.D. is board certified as a dermatologist by the *American Board of Dermatology*, is a fellow of the *American Society for Mohs Surgery (ASMS)*, and the *American Society of Facial Plastic and Reconstructive Surgery*.

Dr. Gross is one of a small number of dermatologists in the region who perform Mohs micrographic surgery. This highly successful surgery is offered in an outpatient setting located at our office: 5222 Balboa Avenue, 6<sup>th</sup> Floor at the corner of Balboa and Genesee. Patients who undergo Mohs micrographic surgery do so in the relative comfort of our office and usually do not require a hospital visit.

Dr. Gross encourages patients to be as informed as possible about the surgical procedure they are considering. He and his staff are available to answer any additional questions you might have.

## Where is Skin Surgery Medical Group?

Our office is located at 5222 Balboa Avenue, 6<sup>th</sup> Floor, near the northwest corner of Balboa and Genesee in Clairemont.

### *From Interstate 5*

If you are heading north, get off at the Balboa Avenue exit and head east approximately 2.5 miles. If you are heading south, get off at the Grand/Garnet exit and make a left at Balboa Avenue and head east. Turn left into the parking lot just before Genesee Avenue. We are located in the building containing the “Balboa Pharmacy.”

### *From Interstate 805*

If you are heading north or south, get off at the Balboa Avenue exit and head west approximately 1.5 miles. Turn right into the parking lot just after Genesee Avenue. We are located in the building containing the “Balboa Pharmacy.”

### *From Interstate 163/15*

If you are heading north or south, get off at the Balboa Avenue exit and head west approximately 2.5 mile. Turn right into the parking lot just after Genesee Avenue. We are located in the building containing the “Balboa Pharmacy.”

If you have any questions about directions, please call us at (858) 292-5101.

# MOHS SURGERY

## Important reminders

- *Do* advise us as soon as possible if you must cancel or change your appointment.
- *Do* get a good night's sleep prior to surgery.
- *Do* take your usual medications on schedule unless otherwise directed by your doctor.
- *Do* take any new medications your doctor prescribes for you.
- *Do* consider bringing someone with you to drive home. **(PLEASE NOT MORE THAN ONE OTHER PERSON)**
- *Do* ask any questions you might have.
- *Do not* eat or drink after midnight if you are having surgery at the hospital.
- *Do not* consume alcohol for one week prior to or one week after surgery.
- *Do not* engage in strenuous physical activity for 24 hours prior to surgery. Discuss with your doctor when you may resume strenuous activities.
- *Unless* your heart doctor tells you that it is okay to discontinue aspirin, it is best not to stop taking aspirin one week prior to surgery (although it can cause bleeding).

## What About ...?

We want you to be as comfortable, relaxed and informed about your Mohs microscopic surgery as possible. If you have additional questions, feel free to call us at (858) 292-5101.

## What is skin cancer?

Skin cancer is by far the most common malignant tumor in humans. It is an abnormal growth of cells that expand in an unpredictable pattern on the skin. The most common types of skin cancer are basal cell carcinoma, squamous cell carcinoma, and malignant melanoma – each named for the particular skin cell from which it arises. Basal cell carcinomas and squamous cell carcinomas are commonly treated by Mohs micrographic surgery in our office. Other less common types of skin cancer may also be treated with Mohs micrographic surgery.

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 beneath 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 is extremely rare in basal cell carcinoma and usually occurs only with long-standing, large tumors. Squamous cell carcinoma is slightly more dangerous, and patients must be observed for any spread of the tumor (although it is unlikely). Melanoma skin cancer is usually not treated by Mohs micrographic surgery.

# MOHS SURGERY

## What causes skin cancer?

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 hereditary in certain ethnic groups, especially those with fair complexion and poor tanning abilities. Fair-skinned people develop skin cancers more frequently than dark-skinned people; the more sun exposure they receive, the more likely they are to develop a skin cancer. But the highest incidence of skin cancer is found in cities such as San Diego where the sun is very intense.

## How is skin cancer treated?

There are several methods for treating skin cancers, including excision (surgical removal), curettage and electrodesiccation (scraping and burning), X-ray therapy, cryosurgery (freezing), topical chemotherapy, Mohs micrographic surgery, and others. The method chosen depends on the location of the cancer, its size, type, and previous treatment. With the exception of X-ray, Dr. Gross performs all of these types of cancer treatments in his office.

## What is Mohs micrographic surgery?

Approximately 40 years ago, Frederick Mohs, M.D., of Madison, Wisconsin developed a unique form of treatment for skin cancer called chemosurgery. Dr. Mohs applied a caustic chemical to “fix” (harden) the area involving the tumor so that it could be removed and traced to all of its edges. Since then the procedure has been refined. Today, almost all the cases are treated by the “fresh tissue” technique which

Sunscreens are available in a variety of forms. Many women prefer moisturizing sunscreens because they keep skin from feeling rough and dry. Many men prefer an alcohol-based sunscreen they can use as an after-shave lotion. The particular brand of sunscreen you choose is not critical, but the Sun Protective Factor (SPF) it contains is. To be effective, a sunscreen should be rated SPF 30 or higher. Active ingredients in sunscreens differ depending on the product used, and some individuals experience an allergic or irritant reaction to the sunscreen. If this occurs, you should bring the products you have used to your doctor, who can make a suggestion for a product in a different chemical family.

Since sunlight is the single most important cause of skin cancer, it is apparent that those who suffer most from sun exposure are those at highest risk of developing skin cancer. They include blond, redheaded, and blue-eyed individuals and people who are otherwise sensitive to the sun. Those with naturally dark skin have the lowest incidence of skin cancer while those with almost no pigmentation have the highest. Other risk factors for developing skin cancer include the previous use of superficial X-rays, trauma from burns or scars, various organic chemicals, exposure to arsenic either in well water, Fowler’s Solution or Paris Green insecticide, and certain inherited syndromes, such as *basal cell nevus syndrome* and *xeroderma pigmentosum*.

# MOHS SURGERY

## **Can I examine myself for other skin cancers?**

Skin cancers can vary in appearance. Regularly checking your skin can alert you to the development of a cancerous condition. Look for:

- Skin growths that change in size and color and appear to be translucent, tan, brown, black, blue, red, or multicolored.
- Any mole, birthmark or beauty mark that changes in color, size, texture or outline.
- Any spot that continues to itch, hurt, crust, scab, erode or bleed.
- Any open sore or wound on the skin that does not heal, lasts for more than one month or heals and then reopens on a regular or irregular basis.

If you have any of these symptoms, or if there is any doubt in your mind, you should make an appointment for a checkup soon.

## **Can I prevent myself from getting skin cancer again?**

Protection from sunlight is very important in preventing skin cancers as well as many of the cosmetic changes of aging. Apply sunscreen every day. For most people, one application will last a full day. With excessive exposure to the sun, reapplication may be necessary. Wide-brimmed hats and long-sleeved shirts of dense fabrics are also protective. Sunbathing and suntan parlors are not a good idea.

omits the use of this caustic chemical and allows dermatologists to remove all of the tumor layers in one day. Mohs micrographic surgery is a technique that allows dermatologists to selectively remove areas involved with the skin cancer, while at the same time preserving the greatest amount of normal tissue possible. If surgical repair of the defect is necessary, it can be done with the knowledge that there is no tumor remaining. As a result, Mohs micrographic surgery is very useful for large tumors, tumors with indistinct borders, tumors near vital functional or cosmetic structures, and tumors for which other forms of therapy have failed.

## **What will happen at my preoperative visit?**

Your first visit allows the doctor an opportunity to examine your skin cancer, obtain your medical history, and determine whether the technique of Mohs micrographic surgery is the most appropriate treatment. It also gives you a chance to meet Dr. Gross and his staff and learn about the procedure.

If your referring physician has performed a biopsy prior to your consultation, we will usually receive a pathology report stating the type of skin cancer you have. If this information has not been obtained, we will perform a biopsy during your preoperative visit. This biopsy is important because it will tell us what type of cancer you have – a critical factor in planning your treatment. The date and time of your surgery will also be scheduled at this consultation.

# MOHS SURGERY

## How should I prepare for surgery?

Eat your usual breakfast and/or lunch. If you normally skip breakfast, please have a morning snack on the day of surgery.

Take all of your regular medications unless directed otherwise by your surgeon or your regular physician. If you take any medicine containing aspirin, salicylates, other pain medicine, anti-inflammatory medicine, or arthritis medicine, please discuss this with Dr. Gross. **DO NOT STOP ASPIRIN THAT WAS PRESCRIBED BY YOUR DOCTOR WITHOUT YOUR DOCTOR'S PERMISSION. DO NOT STOP COUMADIN IF YOU ARE TAKING IT.**

Do not take any herbs, vit E, niacin, fish oil tablets (omega 3) or non-steroidal anti inflammatory medicines like motrin, nuprin or advil the week before surgery.

Wear comfortable, loose-fitting clothing that you can get into and out of easily. Avoid any pull-over clothing. You may also want to bring a blanket and/or sweater since we keep our rooms cool to maintain special equipment.

Please leave your whole day available for surgery. Doing so will allow enough time for you to rest and recover from the procedure. On the day of your surgery, we encourage you to bring one close friend or relative with you who will drive you home. They may also keep you company between each stage of the procedure if you wish.

If you have any further questions about the day of surgery, please contact Dr. Gross.

## If Dr. Gross instructs me to change bandages, how do I do it?

Once Dr. Gross removes your first dressing, you can help by keeping the subsequent dressing fresh and clean. Follow these steps once daily only:

1. Remove the old dressing.
2. Take a cotton-tipped applicator and dip it into the hydrogen peroxide.
3. Gently remove all crusting from the normal skin.
4. *Never place a used applicator stick back into the bottle of hydrogen peroxide.*
5. Apply antibiotic ointment generously to the wound.
6. Cut the non-stick dressing to fit the exact size of the base of the wound and then place it into the base. If the wound has been sutured, the non-stick dressing should cover the wound area completely.
7. Cut a gauze pad to the size of the wound and place it over the non-stick dressing.
8. Use hypoallergenic paper tape to hold the dressing in place.
9. If the wound is near the eye, Dacriose solution should be used for cleaning the wound since hydrogen peroxide may cause irritation if it gets into the eye. If you have any problems or further questions, please call the office and speak to Dr. Gross.
10. We will inform you if this dressing procedure requires modification. Most wounds don't require any care by you other than **GENTLE WASHING**.

# MOHS SURGERY

## How should I care for my wound?

You can act as your own nurse and will be impressed at the excellent job you can do. Dr. Gross and/or a member of his surgery team will give you specific written wound care instructions. With proper care, you will be surprised and pleased at how well and rapidly your wound heals.

If scar lines are more prominent than you would like, it is usually possible to dermabrade the wound about 8 weeks after surgery to blend color and scarring.

## How is the surgery performed?

Mohs micrographic surgery is performed in a procedure room under sterile conditions with a long acting local anesthesia. Once anesthesia is complete, the visible portion of the tumor may be removed by excision or scraping with a sharp instrument called a curette. Following the removal of most of the tumor, a thin layer encompassing the complete undersurface of the tumor is excised. That layer is then cut into small pieces and a map is drawn to identify the location of each piece. The edges of each piece are marked with dyes to aid in orientation on a map. Each piece is then frozen and cut, stained, and examined under the microscope. Any areas in which the tumor is found are marked on the map. Regions with remaining tumor tissue are then re-excised. This procedure is repeated until no more tumor is found and the cancer is entirely removed. After each layer of tissue is obtained, oozing or bleeding vessels are cauterized or ligated with suture. A pressure dressing is applied. You may then rest in our waiting area with your family member or friend.

# MOHS SURGERY



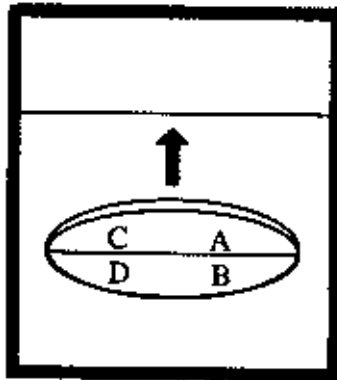
1. The tumor is outlined



2. An injection numbs the area.



3. A thin layer of tissue is excised from the surrounding skin and the base.



4. The removed tissue is mapped, sectioned, and microscope slides are prepared.

## *Healing by spontaneous granulation*

Letting the wound heal by itself is rarely done, but may offer a good chance to observe the healing process and decrease the chance of a recurrent cancer being invisible or hidden. If at any time during the course of healing, the scar is deemed to be unacceptable, a cosmetic surgical procedure can be performed. Allowing wounds to heal this way is relatively painless and offers excellent cosmetic results for many body locations.

## *Closing the wound or part of the wound with stitches*

This procedure often speeds healing and can offer good cosmetic results, especially when the scar can be hidden in a line of facial expression or wrinkling. Sutures generally remain in place for 5 to 7 days and occasionally up to two weeks, depending on the location. Do not bathe the area until the dressings are removed. On the fourth day following surgery you may shower (unless you have a skin graft), but you must avoid swimming for 25 days.

## *Closing the wound with skin grafts, flap repairs or other reconstructive procedures*

For wounds that are too large for primary closure, Dr. Gross may repair the wound with a flap or skin graft. Occasionally, a further tune-up of the repair may be needed, such as laser abrasion or scar revision. Sometimes delayed closures of wounds may be required. Dr. Gross will re-discuss these options with you after the cancer has been totally removed. PATIENTS REFERRED FOR MOHS SURGERY BY ANOTHER SURGEON WILL HAVE THEIR REPAIR DONE BY THAT SURGEON ON THE DAY OF MOHS SURGERY OR THE NEXT DAY.

# MOHS SURGERY

## **Bleeding**

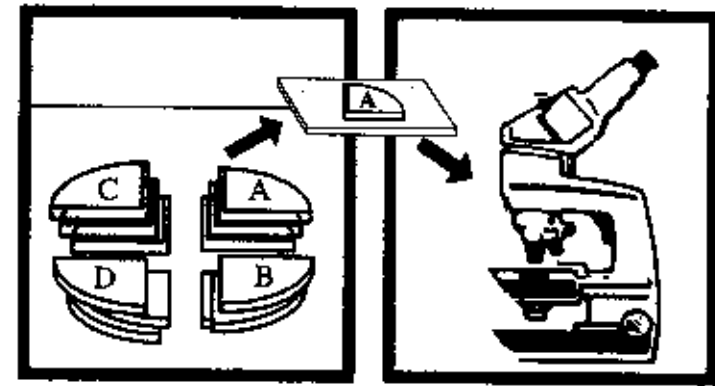
Bleeding is rare. If it occurs, apply firm pressure to the site. If a bulky dressing has been placed on the wound, it should *not* be removed. Direct pressure should be applied to the padded wound for 15 minutes, timed by looking at a clock. Do not discontinue pressure to see if the bleeding has stopped until 15 minutes have elapsed. If the bleeding continues, continue to press directly with an additional clean gauze pad over the bleeding site for another 15 minutes. If bleeding still persists, call our office or go to your local emergency room. Pressure will control the bleeding.

## **Pain**

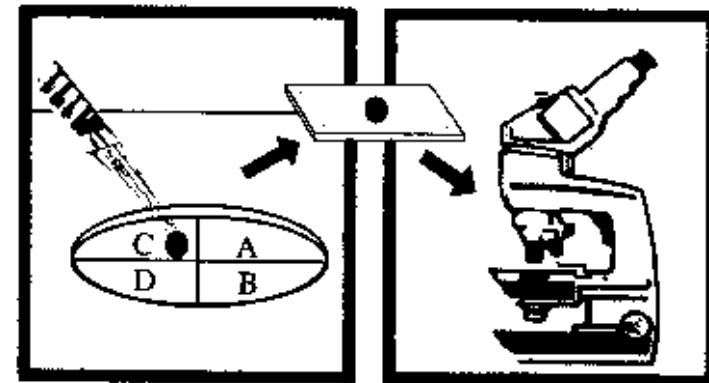
Mild to moderate pain is normal for a day or two following surgery, but generally responds well to oral pain medication such as Tylenol or motrin. Do not use aspirin for post operative pain because it can cause bleeding. If regular pain medications provide insufficient relief, or if the pain increases after 3 to 4 days, you should contact Dr. Gross.

## **How will my wound heal?**

The human body has healed itself naturally for thousands of years before the advent of modern medicine. It has great recuperative ability. After the complete removal of the tumor, several options may be considered for managing the wound.



5. Under the microscope, the deep and outside edge margins are examined. If microscopic examination reveals the presence of additional tumor, it is mapped.



6. Based upon the map, any area of remaining tumor is located on the wound, marked and removed. The entire process is repeated until no further tumor is found.

# MOHS SURGERY

## How long does it take?

It takes 15 to 30 minutes to remove each layer of tissue and about one hour to process and examine. Extensive tumors may need more surgery and may even require a second visit.

## Will Mohs micrographic surgery cure me?

If you have a primary basal cell carcinoma, there is about a 99 percent chance that you will be cured. If you have a primary squamous cell skin cancer, you can be about 95 percent certain you will be cured with Mohs micrographic surgery. However, follow-up visits to detect the rare recurrence are very important. After the initial post-operative period, you will return to your referring physician for routine skin care and tumor surveillance. You should be seen at least once each year for five years to rule out the possibility of recurrence and/or new cancer development.

## How and when will my Mohs wound be repaired?

Since it is not possible to know the exact size of each skin cancer until it has been completely removed, we cannot determine your post-Mohs repair entirely in advance, although we can tell you what to expect.

Some smaller, superficial wounds may heal without stitches. Larger wounds will be repaired by Dr. Gross (occasionally, you will need to be referred to another surgeon for the repair of your wound)

or

BY THE SURGEON WHO REFERRED YOU TO  
DR. GROSS FOR MOHS SURGERY.

## What can I expect after surgery?

After surgery you will have a large pressure dressing in place for 2 to 6 days. Keep this bandage clean and dry. Dr. Gross will remove this dressing during your first post-op visit. Your surgical wound will likely require wound care during the week(s) following surgery. You will have some swelling and redness around the wound. This will gradually disappear over 7 to 10 days. You should plan on wearing a dressing for 3-12 days depending upon how your wound was repaired and plan to avoid strenuous physical activity for 1 to 4 weeks. The wound takes 25 days to become strong.

You may experience a sensation of tightness across the area of surgery. Skin cancer frequently involves nerves. Therefore, months may pass before your skin sensation returns to normal. In some cases, numbness may be permanent. You may also experience itching after your wound has healed. Complete healing of the surgical scar takes place over 12 to 18 months. Especially during the first few months, the site may feel swollen or lumpy and there may be some redness. Gently massaging the area (starting about one month after surgery) and keeping the area lubricated with lotion will speed up the healing process.