

MOHS MICROGRAPHIC SURGERY

INTRODUCTION

Approximately 70 years ago, Dr. Frederic Mohs developed a technique (known as chemosurgery) to remove skin cancers. This method requires highly specialized training and personnel, and the large number of cases which have been cured clearly demonstrates that Mohs surgery is a highly successful method of treatment for skin cancer.

This information attempts to answer some of the questions you may have as a patient concerning this way of treating skin cancer. Should you have further questions, please do not hesitate to contact us at any time.

ABOUT OUR STAFF

The Mohs Surgery team consists of several individuals who will serve you. The highly-trained surgeons that perform Mohs Micrographic Surgery are specialists both in dermatology and pathology. With their extensive knowledge of the skin and unique pathological skills, they are able to remove only diseased tissue, preserving healthy tissue and minimizing the cosmetic impact of the surgery. The American College of Mohs Surgery (www.mohscollege.org) currently recognizes more than 60 training centers where qualified applicants receive comprehensive training in Mohs Micrographic Surgery. The minimum training period is one year during which the dermatologist acquires extensive experience in all aspects of Mohs Surgery, pathology and training in reconstructive Surgery. In addition to the physician, the team includes medical staff experienced in dealing with patients who have skin cancer and are knowledgeable about possible problems which may arise. Another important member of the team is a technician who quickly and skillfully prepares the tissue for microscopic examination. Questions regarding insurance should be directed to your insurance.

When To Schedule Surgery

Depending on the part of the body affected, and especially if the face is involved, you may be instructed after surgery to avoid bending, stooping, and lifting for up to 48 hours following the procedure. You may also be told to apply ice packs intermittently for 24 to 48 hours. The doctor may prescribe medications that could affect your ability to drive. For these reasons, it is important to schedule your surgery for a time when you will be able to keep your activities light and to rest frequently for the first day or two.

PRE-OP QUESTIONS FOR MOHS MICROGRAPHIC SURGERY

Do you take vitamin E, aspirin, Coumadin (warfarin), Plavix, or other blood thinners such as Ibuprofen, Advil, Naproxin?

- If you take **Vitamin E**, please stop these medications at least 7 days before surgery if possible. Stopping ten days prior to surgery is preferable. If unsure about stopping this medication, please call your physician who prescribed them.
- If you take **Coumadin (warfarin)** please ask the physician who prescribed the drug, whether you can stop the medication 2-3 days before surgery. Some physicians may choose to keep patients on the coumadin. If you take **aspirin**, please consult with the prescribing physician to determine whether it is safe to stop 7-10 days prior to the procedure. In most cases, Mohs surgery and reconstruction can be safely performed while a patient is on blood thinners, if these thinners are medically necessary to prevent stroke, heart attack, blood clots or other medically important reasons.
- If you take **Motrin (Ibuprofen), Advil, Naproxen, or any other non-steroid anti-inflammatory**, please stop them 5 days before surgery if possible. Please continue to take all of your other prescribed medications.
- If you have aches and pain before the surgery, Tylenol (acetaminophen) is okay to take. It doesn't cause thinning of the blood.
- Also stop **garlic pills, ginseng, and ginkgo biloba** 7 days before surgery

Do you have any artificial joints or artificial heart valves?

- If you do, you may require antibiotics before the surgery. Please ask your primary care physician whether pre-operative antibiotics are necessary.

Do you require antibiotics before dental procedures?



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- Please ask your primary care physician or dermatologist for appropriate antibiotics if you typically require medication before dental work.

WHAT IS SKIN CANCER? Cancer is tissue which grows at an uncontrollable and unpredictable rate. In the skin, there are three main forms: basal cell carcinoma (or epithelioma), squamous cell carcinoma, and malignant melanoma. The names refer to the cell types from which these cancers are derived.

IS IT DANGEROUS? The most common types are basal cell carcinomas and squamous cell carcinomas. Both types enlarge from the point where they first occur and usually do not spread (metastasize) to distant parts of the body. If not completely removed, both could possibly invade and destroy adjacent structures such as the eye, ear or nose. Compared to other forms of cancer, these types of skin cancer are generally recognized in their early stages and are therefore more easily cured. Malignant melanoma, on the other hand, may be life-threatening if not treated early. It usually appears as a brownish-black spot or bump on the skin which enlarges and sometimes bleeds. Sometimes, but not always, melanomas arise in moles that have been present for many years.

WHAT CAUSES SKIN CANCER? The cause of skin cancer, like other forms of cancer, is not completely known. Excessive exposure to sunlight is the single most important factor associated with the development of these skin cancers which appear most commonly on the face and arms (the most often sun exposed parts of the body).

Skin cancer also tends to be seen more often in certain ethnic groups, especially those with fair complexions. Thus, the tendency to develop skin cancer is inherited along with your type of complexion. Other possible causes of skin cancer include X-rays, trauma, and certain chemicals such as arsenic. There are studies going on today to elucidate these and other possible causes.

HOW DOES SKIN CANCER START? HOW DOES IT GROW? Skin cancer begins in the uppermost layer of the skin and invades downward with roots and to the sides on the surface of the skin. Unfortunately, these extensions cannot be directly visualized. What is apparent to the naked eye on the surface of the skin may actually be only the "tip of the iceberg."

HOW MAY SKIN CANCER BE TREATED? There are several methods of treating skin cancer, all highly successful in the majority of patients. These methods include excision (surgical removal) and suturing (sewing), laser surgery, curettage and electrodesiccation (scraping and burning with an electrical needle), radiotherapy (X-ray), cryosurgery (freezing), topical chemotherapy (chemical destruction) and Mohs surgery (microscopically controlled excision). Which method we use depends on several factors, such as the type of skin cancer, the location of the cancer, the size of the skin cancer, and previous therapies of the skin cancer.

WHAT IS MOHS SURGERY? It is a highly specialized procedure for the total removal of skin cancers. It involves microscopically controlled excision of the cancer and graphic mapping of the lesions for orientation purposes. Thus the name, micrographic surgery, or Mohs surgery after its originator, Frederic Mohs.

HOW IS MOHS SURGERY PERFORMED TODAY? With advanced laboratory methods today, Mohs surgery involves three separate steps:

1. Surgical excision done under local anesthesia
2. Mapping of the excised tissue on paper for orientation purposes
3. Examination of this excised tissue under the microscope. Before the tissue is examined, it is marked with colored dyes to distinguish top from bottom and right from left. By doing this, we are able to pinpoint the exact location of any remaining tumor during the microscopic examination. If more cancer is found, the entire procedure is repeated, but only in the area of the remaining cancer.

Only by the careful, cell-by-cell microscopic examination of the removed skin can one be certain as possible that no cancer remains.

HOW LONG DOES IT TAKE? Total removal of skin cancer, which may involve several surgical sessions, is usually completed in **several hours to 1 day**. After the surgery, a decision is made as to the best way to manage the wound created by the removal of the skin cancer. The length of time can depend on the number of stages and the complexity of the repair that is done.

HOW EFFECTIVE IS MOHS SURGERY IN THE TREATMENT OF SKIN CANCER? Using Mohs



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technique, the percentage of success is very high, often 95-99%, even if other forms of treatment have failed. Thus, with this technique, an excellent chance of cure is achieved. However, no one can guarantee a 100% chance of cure.

WILL THE SURGERY LEAVE A SCAR? Yes. Any form of therapy will leave a scar. By preserving as much normal skin as possible, the Mohs surgery technique tends to minimize the scar as much as possible.

WHAT ARE THE ADVANTAGES OF MOHS SURGERY?

The Mohs surgeon can pinpoint with the microscope the areas where there is cancer and selectively remove tissues only from those areas. In this way the skin cancer is traced out to its roots with little guesswork involved.

This results in:

1. The removal of as little normal skin as possible.
2. The highest chance of curing the patient.

Other forms of therapy frequently have only a 50-70% chance of success in curing skin cancers that have had previous treatment that failed.

WILL MY INSURANCE REIMBURSE ME FOR MOHS SURGERY? Some health insurance policies cover the total cost of Mohs surgery. Most cover at least part of it. Each policy is different. Please check with your insurance regarding coverage.

HOW SHOULD I PREPARE MYSELF FOR MOHS SURGERY?

If you are taking blood thinners (anticoagulant; used to prevent blood clotting), please contact your doctor who prescribed the medication for instructions to determine if it is safe to stop taking the blood thinner 3 to 10 days prior to your surgery if possible. If you are taking a medication other than blood thinner, take it as usual unless we direct otherwise.

If you have heart valve disease, heart murmur, or an artificial hip or knee, you may need prophylactic treatment with antibiotic prior to surgery. Please let us know in advance if you have any of the above-mentioned conditions.

Try to get a good night's rest, eat a light meal, and get to the office on time. It is a good idea to bring a book, newspaper, or magazine with you on the day of

surgery. In some cases, the procedure may take up to a full day, most of which will be spent in the waiting room for your tissue to be processed and examined.

WILL I NEED TO BE HOSPITALIZED? Probably not. Whenever possible, surgery is performed as an outpatient procedure.

HOW MANY SESSIONS OF MOHS SURGERY WILL I NEED? This depends entirely on how deep or extensive your skin cancer is. Unfortunately, there is no way to determine this prior to surgery.

HOW LONG DOES THE SURGERY TAKE? Each step (or stage) of the surgical procedure usually takes only 15-30 minutes. However, after the surgery it usually takes about an hour for the slides to be prepared for the physician to perform the complex microscopic examination. Several surgical stages and microscopic examinations may be required.

DOES IT HURT? A local anesthetic, usually Xylocaine (Lidocaine) and/or Marcaine (Bupivacaine), is injected around the skin cancer to numb the area. This is similar to the injection that the dentist may give you before he/she works on your teeth. The surgery does cause some discomfort, but no pain is felt once the anesthetic has been injected and takes effect.

SHOULD SOMEONE COME WITH ME ON THE DAY OF SURGERY? DO I NEED SOMEONE TO DRIVE ME HOME? It is recommended that you have someone drive you home. It may be more pleasant for you to have company during your day.

WHAT HAPPENS ON THE DAY OF SURGERY?

Appointments for surgery are usually scheduled early in the day. This allows us to complete the surgical steps throughout the day and relieves you of having to make another trip into the office the next day.

The assistant will escort you to a room where we will use a local anesthetic to numb the skin so that you will feel little discomfort during the procedure. Be sure to inform your doctor if you do experience discomfort during the surgery.

The next step is for the surgeon to remove a thin layer of skin involved by the cancer. After the tissue has been carefully removed, bleeding is stopped with a device called a cautery or electrodesiccator. The

assistant will dress your wound, and by the time you get to the waiting room, the removed tissue will be in the laboratory where it is being prepared for microscopic examination.

The longest part of the procedure is waiting for the results of the surgery. **It usually takes about an hour to prepare the slides, although sometimes it may be sooner or take longer.** You may want to bring something to read or occupy the time.

If the examination of the specimen reveals that your tissue still contains cells of skin cancer, the procedure will be repeated as soon as possible. Several surgical excisions and microscopic examinations may have to be done in one day.

HOW MANY SURGICAL SESSIONS ARE THERE? The average number of surgical sessions is two or three, so most patients are finished by mid-day. If you must stay longer, have a light lunch. Avoid alcohol, as this dilates blood vessels and may promote bleeding.

WHAT IS THE NEXT STEP AFTER MOHS SURGERY HAS BEEN COMPLETED?

When we have determined that the skin cancer has been completely removed, a decision is made about the wound created by the surgery. Usually there are three choices:

1. To close the wound with stitches
2. To let the wound heal by itself
3. To cover the wound with a skin graft or a flap

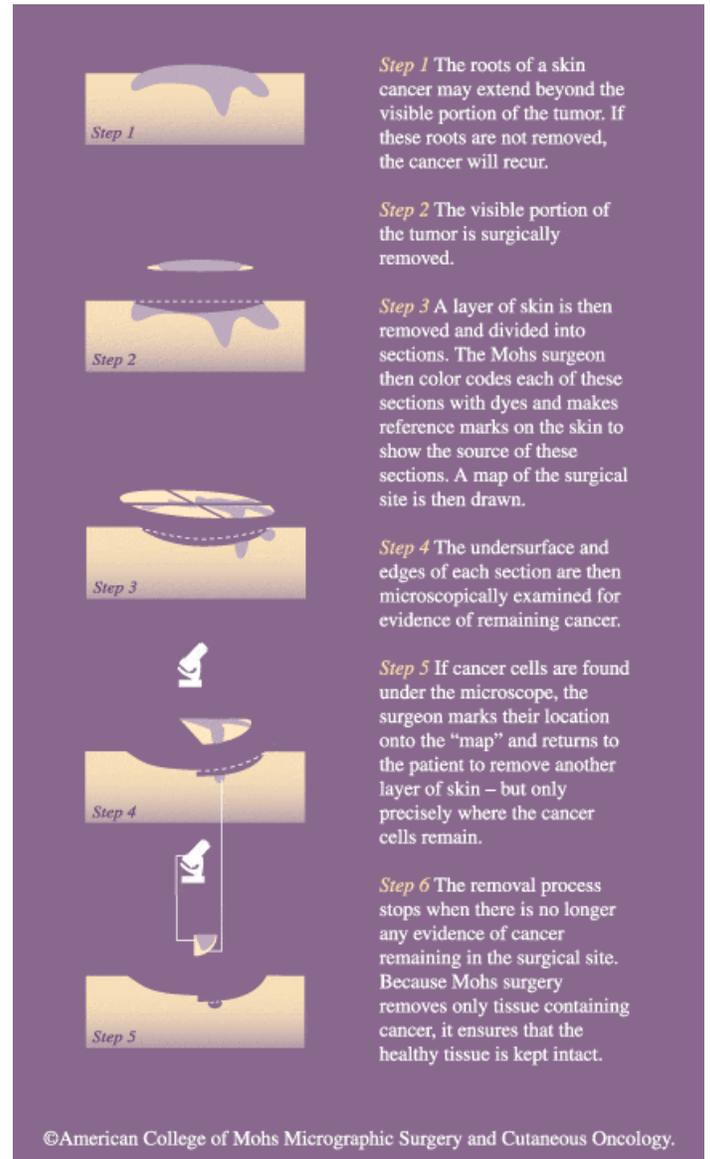
We will recommend which of these choices will be the best for your individual case.

WHAT HAPPENS IF THE WOUND CAN BE CLOSED IMMEDIATELY WITH SUTURES OR IF A SKIN GRAFT IS USED?

If we close the wound with sutures or place a graft, keep the wound clean until your next visit.

IF THE WOUND IS ALLOWED TO HEAL BY ITSELF, WHAT IS THE PROCEDURE? If the wound is allowed

to heal by natural processes (granulation or 2nd intention), it usually heals in 4 to 8 weeks. During this period of time, you will cleanse the wound 2-3 times a day. When healing is well advanced, you will be permitted to stop the dressing changes. If someone



Step 1 The roots of a skin cancer may extend beyond the visible portion of the tumor. If these roots are not removed, the cancer will recur.

Step 2 The visible portion of the tumor is surgically removed.

Step 3 A layer of skin is then removed and divided into sections. The Mohs surgeon then color codes each of these sections with dyes and makes reference marks on the skin to show the source of these sections. A map of the surgical site is then drawn.

Step 4 The undersurface and edges of each section are then microscopically examined for evidence of remaining cancer.

Step 5 If cancer cells are found under the microscope, the surgeon marks their location onto the "map" and returns to the patient to remove another layer of skin – but only precisely where the cancer cells remain.

Step 6 The removal process stops when there is no longer any evidence of cancer remaining in the surgical site. Because Mohs surgery removes only tissue containing cancer, it ensures that the healthy tissue is kept intact.

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else will be doing the dressing changes for you, please bring that relative or friend with you on the day of your surgery in order that we may instruct them in the proper manner.