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Mohs Information Packet

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Michael Swann MD, MS FAAD

Dr. Michael Swann specializes in all aspects of dermatologic surgery with special emphasis on Mohs micrographic surgery (a precise technique to remove skin cancers), reconstructive surgery, laser and cosmetic dermatology. Dr. Swann is a board-certified dermatologist and fellowship trained Mohs surgeon whose primary focus is to surgically remove skin cancers using the Mohs micrographic surgical technique. Dr. Swann also has extensive experience in reconstructive surgical repair of Mohs surgery defects. He did an advanced fellowship in Procedural Dermatology, combining skin cancer & Mohs surgical training with advanced laser & cosmetic procedures.

Dr. Swann grew up in Springfield and graduated from Kickapoo High School. He received his M.D. degree from the University of Oklahoma and was appointed to Alpha Omega Alpha, the medical school's highest honor. Dr. Swann completed an internship in Internal Medicine and Residency in Dermatology at the University of Missouri-Columbia. He then completed a fellowship in Procedural Dermatology (Mohs Surgery, Laser & Cosmetic Dermatology) at prestigious Scripps Clinic in La Jolla, California under the directorship of Dr. Hubert T. Greenway who is one of the few physicians trained directly by Dr. Mohs in Madison, Wisconsin. Dr. Swann completed a fellowship in laser & cosmetic dermatology at one of the leading laser & cosmetic procedure clinics on the west coast under the direction of Victor Ross, MD. Additionally, Dr. Swann holds a master's degree in electrophysiology and trained in advanced vascular treatments including foam sclerotherapy, ambulatory phlebectomy and endovenous ablation with renowned cardiothoracic surgeon Dr. Leeland Housman. Dr. Swann is board-certified in dermatology by the American Academy of Dermatology and entered private practice in 2008, bringing southwest Missouri a wide range of expertise in surgical dermatology.

Dr. Swann is devoted to dermatology surgery and is a speaker at national dermatology meetings on the topic of Mohs micrographic surgery and skin cancer. He is active in the following organizations: American College of Mohs Surgery, American Board of Dermatology, American Academy of Dermatology, American Society of Dermatologic Surgery, American College of Phlebology, American Society for Lasers in Medicine and Surgery.

CLICK HERE FOR DR. SWANN INTRODUCTION VIDEO!

Skin Cancer

Skin cancer is the most common type of cancer. More than 3.5 million skin cancers are diagnosed annually in more than 2 million people. Current estimates are that one in five Americans will develop skin cancer in their lifetime. **Basal cell carcinoma** (BCC) and **squamous cell carcinomas** (SCC) are the two most common forms of skin cancer, but both are easily treated if detected early. These tumors most commonly arise from genetic mutations in the skin caused by sun damage. Fair complexion, light eyes (blue, green, hazel) and family history of skin cancer all increase a person's risk for developing skin cancer. Patients who take immune-suppressing medicines, those with a history of bad sunburns or certain medical conditions (leukemia) are also at increased risk for developing skin cancers.

If not completely removed, skin cancers invade and destroy important structures. Although basal cell carcinomas rarely metastasize (spread to other parts of the body), squamous cell carcinomas can develop and spread more quickly. **Melanoma**, the third most common type of skin cancer is the most likely to spread and can be very dangerous. Melanoma is most commonly treated by excision with a margin, but is treated by Mohs surgery in some instances.

Mohs Surgery

Mohs micrographic surgery is a specialized surgical procedure used to treat skin cancers, typically of the head and neck. Certain tumors of the rest of the body are sometimes treated with Mohs surgery as well. The technique offers two main advantages over traditional skin cancer removal treatments:

- **The highest cure rate**. Mohs surgery for primary basal cell carcinoma, for example, has a 98- 99% cure rate.
- **Tissue sparing**. Because Mohs surgery is a tissue sparing surgery, where only the skin with tumor in it is removed, the patient is left with the smallest defect possible. Smaller defects mean smaller scars in the end, after the defect is closed. In traditional excisions, the edges are not checked in "real-time" so safety margins are necessary. This often leads to larger defects and eventually larger scars. On the face, even a couple of millimeters difference in a scar length can make a big cosmetic difference. (See below for more about scars.)

Not all tumors require Mohs surgery and other good treatments are available for skin cancer. The most common treatment for skin cancer is physical destruction by either cryotherapy (freeze-treating) or curettage with electrodessication (scrape & burn). Topical chemotherapy (prescription cream) is sometimes used for pre-cancer or very early skin cancers. A newer technique for treating early tumors include photodynamic therapy (PDT), whereby a medicine is applied to the treatment site and later activated by narrow-band light therapy. Tumors without aggressive features in areas that do not require tissue sparing may also be treated by standard excision (cutting the tumor out and immediately sewing it up, without checking to see if it is clear first).

Mohs surgery involves a **same-day procedure** where an initial "layer" is taken (the clinical tumor) and examined under the microscope for any involvement of the edges while the patient waits. The tissue is mapped in such a way so that if there is tumor at any one edge, the surgeon knows exactly which edge this is and can go back to take another small piece of skin from this edge only (instead of another whole circle around the defect, leaving a larger defect than necessary).

Repair/Reconstruction

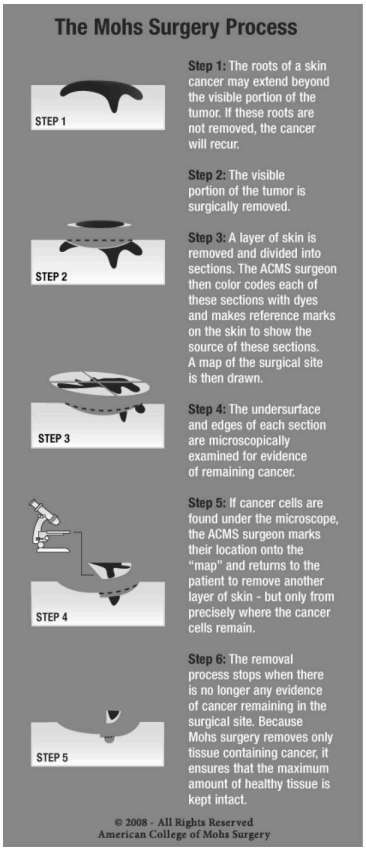
Once the Mohs surgery is complete, you will have a wound or defect where the cancer was located. This wound can vary in size but will always be larger than what was seen initially with the naked eye. The second part of the procedure is repairing this wound. Although Mohs surgery allows for maximal tissue preservation, all surgery results in a scar. Your provider is an experienced reconstructive surgeon and will review the options and recommend the repair that would likely result in the best cosmetic and functional outcome.

Common Types of Repairs:

• Primary Closure: The skin around the wound is loosened then closed in a straight line using layers of deep and superficial sutures. The incision line will be longer than you may expect as the final length is usually three to four times as long as the diameter of the wound.
• Flap: The skin adjacent to the wound is elevated and moved to cover the defect. Flaps are typically used for delicate or difficult areas, under tension, and to minimize distortion.
• Skin graft: Skin from a different area of the body is used to cover the wound. This type of repair can take longer to heal but can provide excellent results.
• Healing by granulation: The wound is left open and allowed to heal on its own. Certain areas heal very well by this manner though typically will take the longest to heal.

How is Mohs Surgery Performed?

Mohs surgery is a highly sophisticated procedure performed by a team of medical personnel that includes the surgeon, nurses, and technicians. It is an outpatient procedure performed under local anesthesia. Your provider performs Mohs on only one site per day. If you have more than one site for Mohs surgery, we will schedule separate appointments one week apart for each site to be removed. Your provider makes exceptions for patients who travel a great distance to come for the surgery. On the day of the surgery, the area of the biopsied skin cancer is identified together by you and your provider. After the region is adequately numbed, the visible cancer is scraped away using a curette to better delineate the cancer. A thin margin of tissue is then taken around and underneath with a scalpel that results in a disc shaped piece of skin being removed. The blood vessels are sealed using an electrocautery and a pressure dressing is applied. The removed tissue is mapped, oriented and marked with colored dyes for orientation and submitted to the technicians to process. The specimen is frozen, cut, stained and placed on a glass slide. Your provider then carefully examines the mapped slides under the microscope to look for any residual cancer on the margins. This allows your provider to pinpoint the precise location of any cancerous roots that remain so extraction can be very precise. Your provider thoroughly evaluates 100% of the margin including all of the edges and the base of the tissue taken. Unlike excisions or other types of pathology tests where only 1-2% of the outer margin is visualized (bread loafing technique), Mohs processing is very unique in that 100% of the tissue margin is visualized. Combining that with the added precision of the surgeon reading the pathology slides gives Mohs surgery the highest cure rate. Each removal and processing of tissue called a "stage" takes approximately 1 hour. If cancer is visualized under the microscope, the surgeon marks that precise area on the map. The patient is brought back into the procedure room and additional tissue is precisely removed from the positive region only and submitted to the Mohs lab for processing. This process is repeated until the margins are clear of cancer. On the average, it takes one to three "stages" to clear the cancer.



Benefits of Mohs Surgery

Mohs surgery offers the absolute highest chance for cure of most skin cancers compared to all other therapies. The cure rates for other common techniques used to treat skin cancer can be as low as 50-70% for previously unsuccessfully treated skin cancers. Using Mohs techniques with the surgeon as the pathologist, precisely locating tumor roots and excavating those roots leads to cure rates as high as 97-99%, even when other forms of treatment have been unsuccessful. Besides the highest cure rate, the precision of tissue evaluation allows the smallest margin possible to be taken, which results in smaller surgery scars, because an unnecessary margin of healthy tissue is not taken. Those who prefer to know definitively that the cancer is completely removed before the tissue is repaired (no guessing), prefer Mohs because when tissue is sent to a pathology lab it generally takes 5-7 days after surgery to find out if the estimated margins were indeed adequate.

Prepare for the Day of Mohs Surgery

Please be aware that you may need someone to drive you home after your Mohs surgery depending on the location of the surgery (near the eye) or if you receive anti-anxiety medications to help your day go smoother. Most patients are scheduled directly for surgery without a preoperative visit. Your provider will have reviewed your pertinent medical history including pathology reports before your surgery and a consultation will be done on the day of the procedure. It is important that you read all the information that we have provided and fill out the Health Questionnaire before your appointment. If you would like to see your provider in consultation prior to the surgery date, we will gladly schedule you an appointment. Please plan accordingly as you will be subject to activity restriction following your surgery. It is recommended you do not participate in athletic activities for 7-10 days following surgery. Mohs surgery is performed under local anesthesia using injections; you will not be put to sleep. We suggest that you eat your normal breakfast or lunch unless otherwise specified. Take all of your normal medications on the day of surgery, unless instructed to do otherwise. Please bathe or shower and wash your hair to minimize your risk of a surgical site infection. If needed, we will provide you with an anti-anxiety medicine once you have signed the consent form. You will need someone to accompany you to give you a ride home. This is a requirement if you receive anti-anxiety medicine. Many of our patients are on **blood thinners** that are prescribed by their physician. We do not recommend stopping them without explicit permission from the prescribing physician. If your prescribing physician has given you guidelines for stopping blood thinning medicines for a few days prior to minor procedures (surgery or dental procedures), check with your physician and follow those guidelines. For those on **Coumadin/Warfarin**, please make sure that your INR is in the therapeutic range and please have your most recent INR available for your provider. We request that you stop taking any prophylactic aspirin or ibuprofen compounds (like Anacin, Bufferin, Advil or Motrin), alcohol, vitamin E, ginko biloba and garlic pills at least 10 days before your surgery. They can increase your risk of bleeding during surgery. If your physician has instructed you to take aspirin for any reason other than routine prevention, please do not discontinue without their permission. Finally, get a good night's sleep the night before surgery.

On the Day of Mohs Surgery

When you arrive and first see your provider on the day of Mohs surgery, you will need to positively identify the biopsy site on which surgery will be performed. The surgical assistant will review your history and prepare the lesion for Mohs surgery. This is a great time to ask the surgical assistant any questions you might have. Your provider will review your case and come in to mark the surgery site in surgical ink. You will be asked to sign consent that you understand the possible risks of surgery (bleeding, pain, infection, recurrence, numbness, scar) and not doing surgery (cancer grows/spreads). The surgical assistant will numb the area with a local anesthetic and prep the area for surgery, which includes getting you comfortable, cleansing the surgical area with antiseptic and placing towels around the operative site. Your provider will then carefully debulk an obvious remaining tumor and remove a layer of tissue. Any bleeding will be controlled using a cautery or bipolar forceps and the surgical assistant will bandage your surgical site. Your provider will take the layer of tissue to the laboratory where it is mapped by orienting it with nicks and tissue dye in preparation for processing. Your provider's histotechnician will then process the outer margin of tissue, making microscope slides of this true margin. These slides are stained with hematoxylin and eosin or special stains so that your provider can carefully examine the microscope slides for any remaining cancer at the margin. This processing takes approximately one hour and is repeated when the microscope slides show residual cancer at any margin. Typically patients are in our office for 3-4 hours, but longer cases do occur when tumors are very large or have ill-defined margins. You will spend a significant time in the "Mohs waiting room" during your appointment while tissue is processing. It is a good idea to bring something to read or work on for the day of surgery. To make your stay more comfortable, we **have a television and wireless Internet access**. You are welcome to bring a friend or family member to your surgery appointment to accompany you while you wait in the Mohs waiting room, but please limit the number of people accompanying you to one person due to the limited space in our waiting room. If you have several family members or friends at your appointment, we may ask you to wait in a designated area within our building at the Hulston Cancer Center.

What to Expect After Surgery

Once your skin cancer has been completely removed, your provider will discuss repair options with you. Repair options are individualized, but options include sewing the skin together (simple closure or skin flap), taking skin from another similar-looking area (skin graft) or actually allowing the wound to heal by itself (granulation). Your provider will discuss options with you and decide on the best repair. For special wounds, other surgical specialists can be involved in the repair of your Mohs wound. Typically sutures are removed 7 days after surgery on the face, and up to 14 days on certain areas.

Mild to moderate post-operative pain usually lasts less than 24 hours and can be controlled using Tylenol (acetaminophen). Bruising and swelling are common following surgery and usually last for 5-7 days. Applying ice during the first 24-hours after surgery reduces bruising, swelling and pain. As the surgery site heals, it is normal for the area to feel like it is tightening. The risk of significant postoperative bleeding is very low. Our staff will place a pressure dressing on the wound after surgery, which should stay in place for 48 hours. A small number of patients have some postoperative bleeding as the epinephrine (adrenaline) in the anesthetic wears off, which usually occurs 1-2 hours after surgery. Applying direct pressure over the dressing for 20 minutes can usually stop this. For any bleeding that is not controlled after 20 minutes of direct pressure, notify us immediately.

Numbness is also common at the surgical site because skin cancers are often found around nerves that carry sensation. This can sometimes become permanent, but most initial numbness improves over 4-6 months. When skin layers are realigned correctly, sensory nerves slowly grow across the scar minimizing numbness. This healing process often makes patients feel like **their scars are sensitive or itchy**. This is normal and can be expected. Occasionally, a patient's tumor is large and reconstruction may be easier for the patient if they are put to sleep by an anesthesiologist. In these cases, your provider will discuss your case with a trusted surgeon for your reconstruction. Most of the time, your provider will repair your wound on the same day as your Mohs surgery.

After any surgical procedures you will be left with a **scar**. Every effort will be made to offer the best possible cosmetic result. The scar will often be longer than what you may have anticipated because cancer "roots" beneath the surface extend beyond what is visible before surgery. The scar may also need to be lengthened to better fit the contours of the skin. Scars can take a few months or longer to heal completely. The scar can be minimized by the proper care of your wound. Your provider will individualize wound care after your surgery, but you should plan on applying ointment to your wound twice daily for 2 weeks and applying a bandage twice daily for 1 week. **Keeping the area moist after surgery and being disciplined to not let air get to the suture line will generally give you the best cosmetic and functional result**. Three weeks after surgery, a thick or bumpy scar line can be improved with gentle massage performed for 2 minutes, 2 times daily for 2 months.

Follow-Up Care
After you have a skin cancer, there is a 50% chance that you will develop a second skin cancer within 5 years. After a diagnosis of skin cancer, your provider recommends that you see a dermatologist at least once per year for 3-5 years following Mohs surgery.

Frequently Asked Questions
I don't see anything after my biopsy. Do I really need to be treated?
Yes. Following a biopsy, your skin cancer may no longer be visible. However, the surface lesion that was removed can represent the "tip of the iceberg." More tumor cells may remain in the skin. These can continue to grow downward and outward, like roots of a tree. These "roots" are not visible with the naked eye. If they are not removed, the tumor will likely reappear and require more extensive surgery (see examples of cited studies below). Tumors that are neglected can spread deeply into the skin and invade nearby structures. On rare occasions, these cancerous cells can metastasize to lymph nodes and other organs in the body.

Why does my skin cancer need to have Mohs surgery?

Mohs surgery has the highest cure rate. It is appropriate for most skin cancers and especially suitable for skin cancer that:
•Is in an area where it is important to preserve healthy tissue
•Was treated previously and has come back
•Is located near scar tissue
•Is large
•Does not have clearly defined edges
•Is growing rapidly or uncontrollably
•Is of an aggressive subtype (i.e., morphoeic or infiltrating basal cell carcinoma, squamous cell carcinoma)
•Develops in organ transplant or lymphoma patients

Key Points
1. The night before your surgery, **bathe & cleanse the skin.**
2. The night before your surgery, **get a good night's sleep**.
3. Take your normal medications, unless otherwise specified.
4. Eat a normal breakfast or lunch before your appointment unless otherwise specified.
5. Bring a book or something to pass the time while you are in the Mohs waiting room waiting
6. **Please plan on spending 4 hours in our office**.
    • Although most patients are generally clear and ready to leave well before 4 hours, we cannot predict the extent of your skin cancer's roots until we begin surgery.
7. Have a driver escort you after the procedure if needed.
8. You can purchase bandage materials in our office or at your local pharmacy.
9. For convenience, **we sell bandage materials at our cost to make them readily available to you**.
10. **No bending over at the waist for 2 days.**
11. **Limited activity for 7 days after surgery.**
12. **Plan to return in 7 days for suture removal.**

Our providers and their staff aim to provide the best experience possible for you on your day of surgery. Although we operate on critical and cosmetically sensitive areas every day, we realize that you don't have surgery every day and any surgery can create anxiety. This educational information is intended to help you understand what to expect on the day of your surgery and help your day go very smoothly.

Dr. Swann - Mohs Before & Afters