Facts About Mohs Surgery

The following information is provided to assist you with an understanding of the procedure(s) that you may undergo for the treatment of your skin cancer. During your appointments, our staff will discuss your condition in detail and try to answer all of your questions. At the back is a blank page for notes or to write questions for our medical staff. We encourage you to ask questions at any time during your treatment.

• Mohs surgery was developed in the 1940s by Dr. Frederick Mohs, a general surgeon from the University of Wisconsin, as a method to remove skin cancers.

• Mohs surgery is a specialized technique for removing various types of skin cancer.

• Mohs surgery is also known as “microscopically controlled surgery.” A microscope is not used during surgery, but is used to examine skin tissue immediately after it has been surgically removed.

• Mohs surgery provides the most accurate means of removing skin cancer while at the same time preserving healthy tissue.

• Mohs surgery provides the opportunity for the evaluation of all tissues around the surgical margins as compared to a “sampling” of the margins which occurs with routine evaluation of excised tumor specimens.

• Mohs surgery is normally performed as an outpatient procedure. While 4 hours is the average time for surgery, be prepared to spend the entire day. Dress comfortably (avoid wearing pull-over type clothing) and bring reading material or other items to help pass the time. We ask that you to bring a friend or family member with you for companionship and to drive you home after surgery.

If you have questions about your surgery or treatment, please do not hesitate to ask the doctor or nurse.

For appointment information, please call (314) 256-3420.
Skin Cancers

There are various types of skin cancers, or carcinomas. The most common type is basal cell carcinoma. Less common types are squamous cell carcinoma and melanoma.

Basal Cell Carcinoma

Basal cell carcinoma is the most common type of skin cancer and also the most common type of cancer found throughout the body. While the thought of any type of cancer can be frightening, fortunately, basal cell carcinoma tends to be a localized problem and rarely spreads to other areas of the body. Basal cell carcinomas can vary in size and appearance and occur anywhere on the body, but most often on the face—with the nose, cheeks, ears, and eyelids most commonly involved. Basal cell carcinomas usually grow slowly, although in some cases basal cell carcinomas may grow quickly or begin to breakdown and bleed, forming a non-healing sore.

Basal cell carcinomas can be compared to tree roots where the cancer roots grow below the skin, or to an iceberg where the visible skin cancer is the tip of the iceberg and there is more cancer hidden below the skin.

Locally, basal cell carcinomas can be quite destructive because they invade nearby tissue. On the back, local invasion is usually not a problem because there is no critical tissue nearby. However, when basal cell carcinoma occurs on a critical structure, such as the nose, ear, eyelid or lip, local invasion and destruction of tissue can have more serious consequences.

Several effective techniques are used in the treatment of basal cell carcinoma including conventional surgical excision, curettage and electrodessication (“scraping and burning”), cryotherapy (freezing with liquid nitrogen), radiation therapy, intralesional interferon and Mohs surgery. Each technique has unique advantages and is effective in various situations. While Mohs surgery is the most effective technique for the management of skin cancers, especially recurrent ones, it is not used to treat all basal cell carcinomas. Only selected patients fully benefit from Mohs surgery.

Squamous Cell Carcinoma

Squamous cell carcinoma is the second most common type of skin cancer. Squamous cell carcinoma is more serious because it has a greater ability to spread to different areas of the body. Even though squamous cell carcinoma may spread to nearby lymph nodes, it rarely spreads to other areas of the body.

Squamous cell carcinoma can occur anywhere on the body with the face most often involved. Squamous cell carcinoma can grow locally both in depth and width, similar to basal cell carcinoma. Treatment methods for squamous and basal cell carcinomas are also similar. Each patient is carefully evaluated to determine the best method of treatment.

Melanoma

Melanoma is the most serious type of skin cancer. Melanoma may develop from an unusual mole or as a new lesion. Melanomas are most often dark in color, but may also have a variety of colors or shades, irregular borders or lack uniform appearance. Melanomas are more common in individuals who have many moles or who have a family history of melanoma. All moles are not necessarily melanomas. However, if you notice any change in the appearance of a mole, or develop other symptoms—such as burning, itching or bleeding—contact your physician immediately for evaluation!

Surgical excision is the primary method for the treatment of melanomas. Mohs surgery has been used in certain cases (such as lentigo maligna), but not on a routine basis.

Other Skin Cancers

Other rare types of skin cancer can be effectively treated by Mohs surgery. Adnexal tumors (tumors of the hair follicles and sweat/oil glands, such as: microcystic adnexal carcinoma, desmoplastic trichoepithelioma and sebaceous carcinoma), extra-mammary Paget’s disease, dermatofibroma sarcoma protuberans and atypical fibroxanthoma are examples of rare tumors that can be effectively treated by Mohs surgery. You may have a tumor that is not described here, but also may be well managed by Mohs surgery.
Mohs Surgery

**Indications**

Mohs surgery is most commonly used for the treatment of skin cancers in the following circumstances:

- Where the skin cancer is located on a critical structure (such as the eyelid, ear, nose or lips). In these cases, it is important to remove the cancer with preservation of surrounding normal tissue.

- When the skin cancer has recurred after being treated by another method. A recurrent cancer can be more difficult to remove because it may grow beneath the scar before surfacing, resulting in its true borders being difficult to identify.

- Where the skin cancer is on an area of the body that is conducive to aggressive growth (have more roots), such as the center of the face.

- Where the margins or borders of the skin cancer are very indistinct, meaning that it is difficult to see where skin cancer ends and normal tissue begins.

- Incidents in which a skin cancer has been surgically excised, but the pathology lab report indicates some of the cancer has been left behind—sometimes described as “the margins are positive.” A scar may exist without other visible evidence of skin cancer.

**Your Surgery**

**Procedure**

Mohs surgery differs little from other types of cutaneous (skin) surgery. A local anesthetic is used to numb the surgical area. You may experience brief stinging or burning around the area where the surgery is to be performed. To minimize discomfort, the area of the skin to be numbed will be shaken if possible. It takes about 20 minutes for the anesthesia to take full effect. You may notice the area becoming numb immediately, but additional time is required for the adrenaline in the anesthesia to take full effect so bleeding will be minimized.

We will then begin the Mohs surgery in an operating room or minor surgical procedure room by excising around the skin cancer with a scalpel. Only the area that appears to be abnormal is first excised. Any
bleeding is controlled by electrocoagulation. You may hear a buzzing sound when this machine is used. After surgery is completed, the excision is bandaged. The surgery itself takes only a few minutes. Tissue processing may take up to 60 minutes. During processing you will either remain in the surgical area or return to the patient lounge area with friends or family members. Patients who have more than one skin cancer will require multiple visits as each cancer is managed individually.

While you are waiting, our certified histotechnician and our Mohs surgeons will review the removed tissue in our frozen section laboratory. The technique of preparing and examining the skin tissue immediately after surgery by the Mohs surgeon, with the patient still available, makes Mohs surgery unique and effective. Tissue processing usually takes about 20 to 30 minutes, longer if the tissue section is larger. The tissue is then examined under a microscope, viewing the entire outer aspect of what was removed during surgery. We process and examine the tissue section under a microscope to see if there is any skin cancer on the outer edges. If we find cancer, we know that some skin cancer remains at the excision site. We know where the skin cancer is located, because we drew a “map” of where each skin specimen was removed. If we find cancer remaining, we bring you back into surgery, “re-numb” the area, and repeat the Mohs procedure. Only the affected tissue is removed, which preserves your healthy tissue. In an effort to prevent the skin cancer from returning, we are “chasing each of the roots” of the skin cancer until it is completely removed.

The procedure is repeated until the entire area has been cleared of skin cancer. Each Mohs surgery is referred to as a “stage.” On the average, it takes 2 to 3 stages to remove all of the skin cancer. You may require only 1 or 2 stages, or several stages, depending upon your condition. Unfortunately, we are unable to predict by visual inspection how many stages will be necessary.

Our goal is to remove all of your skin cancer, while at the same time preserving the maximum amount of surrounding healthy tissue. Mohs surgery offers a high cure rate and minimizes the removal of healthy tissue. As a result, not only is all of the skin cancer removed, but the best overall cosmetic results are also possible. However, not all surgical areas are small. Some skin cancer can be quite extensive. Mohs surgery does not determine the size of the surgical area. It is determined by the size and nature of your skin cancer.

Even though Mohs surgery has the highest cure rate for several skin cancers, it is not 100% successful. But, the risk of recurrence is only 1 to 5% for most cancers, depending upon the location and type of your skin cancer, with recurrent cancers being more difficult to treat. Some cancers and certain situations may have a higher risk of recurrence. In all cases, close follow-up after surgery by your referring physician is crucial to monitor any possible return of skin cancer. In addition, once you have been diagnosed with skin cancer, you are at higher risk for developing a second skin cancer. Regular check-ups with your dermatologist are important so that any recurrence or new skin cancer can be treated early.

What if no skin cancer is found?

In some cases, no skin cancer is found on the first stage. The skin cancer may have been entirely removed by the biopsy performed by your referring physician, or may be in an adjacent area deep to the sample removed. When the biopsy has removed the majority of skin cancer and an extensive scar is present, cancer may still remain. If the area appears normal, we may decide to stop at this point and have the area followed by your referring physician. If there is clinical suspicion for residual skin cancer or extensive scar tissue, an additional surgical stage will be taken.

A third scenario may occur. Sometimes a skin cancer has been excised by your referring physician, but the pathology report indicates that some cancer may remain at the excision site, also referred to as having “positive margins.” Occasionally, through your body’s natural healing process, the remaining cancer cells will be destroyed and no cancer will be found at the time of your Mohs surgery. Nonetheless, when you are told that a cancer has not been completely removed, you should undergo further treatment to make sure it is removed. Don’t take the chance that your body will “take care of things.” Skin cancer that recurs in a scar can be more extensive and have more “roots.” It is best to treat skin cancer early to eliminate spreading to other areas of the body.

Lastly, it is possible that your skin cancer was removed by the first Mohs stage and no other skin cancer remains.

It is important to accurately identify your cancer biopsy site. We will confirm this with you at the time of your consult and surgery appointment. This is to assure that the proper site is excised.

**Preparation For Your Mohs Surgery**

In your information packet there will be a form for medical history and insurance information. Please complete the forms and bring them and your insurance cards with you on the day of your consultation. During your consultation our staff will review your history and ask you additional questions.

With approval from your referring physician, blood thinners (Coumadin/Warfarin) may be discontinued at least 3 days prior to your sur-
After Your Mohs Surgery

Once the skin cancer has been removed, there will be a “defect” or an open wound in the area that the cancer previously occupied. Two options are available:

Allow the wound to heal on its own.

This is appropriate if the wound is extremely small or in a location where the resulting scar is anticipated to be cosmetically acceptable. In certain locations your body’s natural healing does a good job. Allowing a wound to heal by itself requires daily care and, depending upon the size, may take up to 4 to 6 weeks to completely heal. Despite being an open wound, infection, bleeding and pain are uncommon.

Close the wound with sutures (stitches).

Appropriate when the optimal cosmetic result is desired and the natural healing process is inadequate. Most reconstructive surgery can be performed on the same day of your Mohs surgery. The wound may be closed by shifting nearby tissue (a skin flap) to fill the wound, or by taking skin (a skin graft) from another area of your body (in front or behind the ear, the neck, collarbone region, or thigh) to cover the wound. Skin grafts may require a “bolster” dressing—a special bandage which is sutured over the skin graft. The “bolster” dressing will remain over the graft for a week or until sutures are removed.

In some cases the wound is quite extensive and may require the assistance of another surgeon. We will assist you in making additional arrangements with a SLUCare physician or a physician closer to your home. There may also be times when your referring physician may refer you for Mohs surgery with a plan to perform reconstructive surgery shortly afterwards. Most often this occurs the same day or the following day. A delay between your Mohs surgery and reconstructive surgery may not be convenient but it will not cause ill effects. It is often necessary as the Mohs surgery may require the majority of the day.

Following reconstruction, you will be provided with instructions for the care of your wound. Written instructions (with verbal explanations from the doctor or nurse) and phone numbers (both day and night) will be provided.

Post-Surgical Notes and Recommendations

Minimal discomfort is expected after Mohs surgery and can usually be managed well with acetaminophen (Tylenol). Significant discomfort should be reported to us! You may experience some localized swelling and bruising, which may not be at its worst until 3 to 4 days after surgery. Some swelling and bruising is normal and should improve 5 to 7 days after surgery. If you have surgery on your forehead or nose, you may experience some swelling of your eyelids, at times nearly closing the eyelids. Although your surgery was not on your eyelids, due to gravity, swelling and bruising will “settle” around the eyes. Similarly, swelling and bruising may occur down the neck, and rarely the chest, when surgery is performed on the chin or jawline area. To help reduce swelling and bruising, apply an ice pack for twenty minutes each hour while awake for the first 48 hours.

Bleeding rarely occurs after Mohs surgery. A little blood or seepage on the dressing is normal and not a cause for alarm. If you notice active bleeding (meaning the bandage is soaked with blood), remove the bandage and apply firm pressure over the area with dry gauze or a dry cloth (such as a washcloth) for 20 minutes measured “by the clock.” Most bleeding should...
stop. If bleeding continues, contact our office or the on-call dermatologist (after office hours). We will determine the necessary treatment. On rare occasions it may be necessary to have the bleeding stopped by cauterization in our office.

We recommend that you limit vigorous physical activity, excessive bending over or exercise for 7 days after your Mohs surgery to allow your wound to heal. Vigorous activity can cause bleeding or “popping open” a stitch, which can cause healing problems. Please adjust your schedule accordingly.

Sutures are usually removed 5 to 10 days after surgery. We will follow you through the postoperative period to assure acceptable wound healing occurs or to determine if additional procedures are necessary for improvement. In some cases, scar revision or resurfacing of the scar may be of benefit and appropriate. No reconstruction is without scarring but the goal is to minimize the appearance of the scar. Scars are not always invisible but they do tend to improve over the course of several months with significant improvement noted during the first month.

If you are doing well at the time of suture removal we may discharge you to the care of your referring Dermatologist. It is important that you keep regular follow up examinations with your Dermatologist. You are at increased risk of developing additional skin cancer and precancers. Early diagnosis and treatment will benefit you. As well, examination of your surgical site is needed to monitor for any recurrence of your treated skin cancer.

**Additional Information**

**Insurance**

We accept most health care plans and Medicare assignment. In some cases your insurance plan will reimburse us directly. If not, we will provide you with the necessary information for reimbursement. Please check your insurance plan for specific coverage and reimbursement policies. You may be responsible for a deductible and/or co-payment. Co-payments are collected at the time of your office visits and on the day of surgery as required by your health plan. We will need to make a copy of your insurance card. Please bring it with you to all your visits. If your insurance coverage changes during the time our staff is caring for you, please inform us.

**Pre Authorization**

Several health insurance plans require authorization by your primary physician to see our physicians for your office consultation and Mohs surgery. If this is not obtained we are unable to bill your insurance for the service provided. This is very important. Often you, the patient, must obtain the authorization from your physician as we are not allowed to do so. We will assist you with any information you need to do this. At times your dermatologist or surgeon will recommend that you see one of our physicians, but you must first have this approved or authorized by your primary physician. If you are uncertain about what you need to do, please contact your insurance company and your primary care primary physician. Keep notes on what they tell you and to whom you spoke. Write down any authorization numbers they give you.

Insurance issues have become quite complicated and despite everyone’s efforts, insurance companies will sometimes deny payment for your care. Please be patient with our inquiries regarding your insurance status and allow us to assist you with any questions or concerns. We apologize for any repeated inquiries. Please understand that the changes in health care have made the process and paperwork more complicated and involved. Often, several different members of our staff need access to your insurance and authorization information. Much time is required in addressing these issues. We appreciate your cooperation, patience and understanding with this aspect of your visit.

If you do not have insurance, financial arrangements need to be made. Our staff is available to discuss this with you.

We will need your signature on a release form so we can request your medical records and pathology slides. This must occur before you leave your consultation visit.

**Overnight Accommodations**

If you or a family member need assistance in finding overnight accommodations, please call the Saint Louis University Hospital Guest Relations Department at (314) 577-8500. They can provide information on hotels and motels in the St. Louis area that offer special rates. Guest relations representatives can also provide information on area restaurants and entertainment. If you are travelling a great distance you may find this service beneficial.

**Additional Resources**

SLUCare [http://www.slucare.edu](http://www.slucare.edu)
Saint Louis University Cancer Center [http://cancercenter.slu.edu](http://cancercenter.slu.edu)
American Academy of Dermatology [http://www.aad.org](http://www.aad.org)
American College of Mohs Micrographic Surgery and Cutaneous Oncology [http://www.mohscollege.org](http://www.mohscollege.org)
Summary
We hope that your visit to the Mohs and Cutaneous Oncology Unit at SLUCare is pleasant. It is not unusual to be anxious in anticipation of any surgical procedure. By reading the information provided and having your consultation, we hope to make you more comfortably prepared for your Mohs surgery. Our well-trained and experienced professional staff is available to answer any questions and to assist you in any way necessary to make your visit pleasant. We look forward to meeting you.

Surgical/Insurance Check List

1. If you are to receive intravenous sedation, please do not eat or drink anything after midnight the night before your surgery. Otherwise, eat a normal meal the day of your surgery. Light fare (breakfast and lunch) is available on the ground floor of the Anheuser-Busch Institute.

2. Take your normal morning medications the day of surgery unless they have been temporarily discontinued by your doctor. Bring any medications that you may need during the day and please inform the nurse of your medications.

3. Bring reading material or other items to help pass the time.

4. Have a friend or family member accompany you.

5. We may ask you to consult your referring physician to try to eliminate any medications, which promote bleeding before your surgery date. Permission to discontinue any prescribed medication (e.g. Ticlid, Plavix, Coumadin/Warfarin) must be obtained from the prescribing physician.

Non-physician prescribed over the counter medications that could also cause bleeding may be asked to be stopped. These include dietary supplements (such as Vitamin E, Gingko, Ginseng), aspirin, and aspirin products, as well as non-steroidal anti-inflammatory agents (such as Ibuprofen, Motrin, Advil, Alevee).

Tylenol does not cause bleeding and can be used for pain as an aspirin alternative before and after your Mohs' surgery. We will review your daily medications and discuss them during your consult with us.

6. Please refrain from smoking and drinking alcohol 10 days prior to your scheduled surgery.

7. Because you may not be able to shampoo for several days after your surgery, wash your hair the evening prior to your surgery.

8. Please do not wear cosmetics the day of your surgery.

9. To avoid pulling clothing over your surgical incision, wear loose-fitting, comfortable clothing, especially a shirt/blouse that buttons.

10. If you have an artificial heart valve, a heart murmur, or a prosthesis (such as an artificial hip or knee), we may prescribe antibiotics prior to and after Mohs surgery. Antibiotics are not always necessary with skin surgery, but may be recommended for some patients.

11. The nature of your care may result in extra time the day of surgery. Be prepared to spend the full day with us.

12. Purchase the following for your wound care needs after your Mohs surgery:
   • Q-Tips
   • 3% Hydrogen Peroxide
   • Polysporin or Bacitracin (avoid Neosporin or neomycin-containing products)
   • Non-Stick Bandage (such as Telfa Bandage)
   • Paper Tapes (such as Micropore)

13. Insurance authorization needed:
   
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   Date Obtained_________

   Authorization #_________

   Spoke with ______________________________
   ______________________________ Date ______

14. Co-payment needed:

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   If yes, amount for office visits _______

   amount for surgical procedure _______

15. Bring insurance card with you.

16. If you have any questions please contact us at (314) 256-3420 or (800) 354-7479 during office hours
Anheuser-Busch Institute of Saint Louis University

The Anheuser-Busch Institute (ABI) is a facility of Saint Louis University Hospital. It is located approximately 1/2 mile south of the Saint Louis University Health Sciences Center campus at 1755 South Grand Boulevard, just south of I-44 at Grand Boulevard and Shaw Avenue (see map).

The building has been completely remodeled and updated to facilitate various outpatient services including outpatient surgery. ABI provides the operating room facilities where your Mohs surgery will be performed. You will find the staff courteous, caring and eager to assist you throughout your visit.

SLUCare Des Peres
Des Peres Medical Arts Pavilion

SLUCare Des Peres is conveniently located near the intersection of Interstate 270 and Dougherty Ferry Road in the Des Peres Medical Arts Pavilion on the Des Peres Hospital Campus. Our offices are located on the first floor in Suite 100.
Scott W. Fosko, M.D.

Dr. Fosko, a native of Maryland, attended college at the University of Notre Dame where he met his wife from Alton, Illinois. He attended medical school at the University of Maryland in Baltimore. After graduation, Dr. Fosko completed his training in internal medicine at the University of Virginia followed by specialty training in dermatology at Yale University and subspecialty training in Mohs micrographic surgery and cutaneous oncology, and dermatologic surgery at the University of Pennsylvania. Dr. Fosko is board certified in both dermatology and internal medicine. He, his wife, and three children, moved to St. Louis in July of 1993 when he joined the faculty of Saint Louis University School of Medicine. His academic interests are the treatment and research of skin cancer including melanoma. He currently is professor and chairman of Dermatology at Saint Louis University School of Medicine, Director of the Saint Louis University Melanoma Group and Director of the Mohs Surgery and Cutaneous Oncology unit. Dr. Fosko is active with Cancer Center initiatives of Saint Louis University Hospital and the hospital's Cancer Committee.

Summer R. Youker, M.D.

Dr. Youker, a native of Texas, joined the faculty in July 2003 after completing her fellowship in Mohs micrographic surgery and cutaneous oncology at the University of Massachusetts Medical Center in Worcester, MA. She earned her bachelors degree from Austin College in Sherman, TX and her medical degree from the University of Texas Health Science Center in San Antonio, TX. Dr. Youker completed a residency in dermatology and an internship in internal medicine at Penn State College of Medicine in Hershey, PA. She has a special interest in cutaneous oncology, the management of skin cancers in organ transplant patients and skin cancer prevention. Dr. Youker is an active member of the Saint Louis University Hospital Cancer Committee.
Mark M. Doig, PA-C

Mark Doig is a physician assistant in our Mohs Surgery and Cutaneous Oncology unit. He joins us from a dermatology practice in South Carolina where he practiced for 3 years. Prior to this, he was a respiratory therapist at the Cleveland Clinic Foundation for 14 years, a supervisor of the Cardiothoracic Respiratory Care Unit and a cardiothoracic anesthesia intensivist. Mr. Doig is a graduate of Kent State University and completed his physician assistant training at Cuyahoga Community College followed by a postgraduate fellowship in dermatology at the Cleveland Clinic Foundation. He has a wealth of clinical experience and will greatly assist in caring for your dermatology needs. He works closely with Drs. Fosko and Youker and their staff in the Mohs dermatologic surgery unit assisting our patients with skin cancer, precancerous lesions, melanoma follow up and skin examinations.

Our faculty, fellows, resident physicians and staff greatly appreciate the opportunity to assist in your care in the academic setting of Saint Louis University. It is our desire to provide prompt and timely consultative services and to support your referring physician’s needs. We strive for excellence in all aspects of your care and consider it a privilege to do so.

SLUCare®
The Physicians of Saint Louis University

Department of Dermatology
(314) 256-3420
(800) 354-7479
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