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## GUIDE TO MOHS MICROGRAPHIC SURGERY

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### WHAT IS MOHS SURGERY?

Mohs micrographic surgery is a method of skin cancer removal that results in low recurrence rates and maximum preservation of normal surrounding tissue. The technique was developed by Dr. Frederic Mohs in the 1930's, and has been refined over the years. It is widely accepted as a highly effective method of treating certain types of skin cancers.

### WHAT IS SKIN CANCER?

Cancer consists of cells growing at an irregular, unpredictable, and uncontrollable rate. Skin cancer is the most common form of cancer in humans. Each year, over one million people will develop skin cancer in the United States. If left untreated, skin cancer will continue to grow and could destroy healthy surrounding tissue and may even spread to other parts of the body. While there are many types of skin cancer, the most common forms are basal cell carcinoma, squamous cell carcinoma, and melanoma. Actinic keratosis is a form of precancer and has the potential of becoming a skin cancer.

### WHAT TREATMENTS ARE AVAILABLE FOR SKIN CANCER?

There are several methods available for treating skin cancer. The chosen method will depend on the type, size, and location of the skin cancer, and whether it has been treated previously. The patient's age and health may also influence the chosen treatment. Your physician can discuss the various treatment alternatives with you.

Treatment methods available include:

1. Curettage and desiccation – scraping and burning the affected tissue
2. Cryosurgery – freezing the affected tissue
3. Topical or intralesional chemotherapy
4. Radiation therapy (X-ray treatments)
5. Traditional surgical excision
6. Mohs micrographic surgery

### WHY CHOOSE MOHS SURGERY?

Mohs surgery is a safe and effective outpatient surgical procedure for removing certain types of skin cancer. This technique focuses on complete removal of the skin cancer with a cure rate as high as 98-99% depending on the cancer type, size, and location. Using a microscope to examine the margins, the Mohs surgeon can be very precise at determining when the cancer has been removed, thus preserving normal surrounding tissues and allowing the smallest possible surgical wound and scar.

### INDICATIONS FOR MOHS SURGERY INCLUDE:

1. Poorly defined tumors
2. Incompletely excised tumors
3. Recurrent tumors
4. Tumors in areas difficult to treat (e.g. nose, ears, around the mouth, around the eyes)
5. Tumors in areas where tissue preservation is important (e.g. hand, genitalia)
6. Large tumors (>2 centimeters)
7. Aggressive or fast-growing tumors

### WHAT DOES MOHS SURGERY INVOLVE?

Mohs surgery is a relatively minor surgical procedure performed with local anesthesia in an outpatient setting.

1. The visible skin cancer is identified and outlined.
2. This area is numbed with a local anesthetic and the tumor is surgically removed by your doctor.
3. The small amount of expected bleeding may be controlled with an electronic device that coagulates the blood vessels.
4. A dressing will then be placed on the wound and you will wait for the results.
5. In the laboratory, thin slices are taken from the removed tumor and the margins are examined under a microscope by your doctor.

6. If any of the skin cancer remains at the margin, another slice of tissue is removed from the involved area and taken to the laboratory.
7. This is repeated until no further skin cancer is found at the margin.
8. Once the skin cancer is gone, your doctor can determine the type of care the surgical wound will need.

### WHAT ARE THE RISKS?

Any surgical procedure involves risk. The risks involved with Mohs surgery are small but include:

1. Reaction to the local anesthetic, including pain as it is injected.
2. Reaction to tape, stitches, or medications.
3. Bleeding during or after the surgery.
4. Infection of the skin after surgery.
5. Poor or slow wound healing
6. Scarring. A scar will definitely be present after the surgery, and occasionally one or more procedures to improve the scar may be needed.
7. Damage to nerves. This can include numbness (loss of sensation) or weakness (loss of muscle function). This damage can be temporary or permanent.
8. Recurrence of the skin cancer. Although this is rare following Mohs surgery, skin cancers may return following the procedure. This can happen months or years later. Regular follow up examinations with your dermatologist are essential. In addition, patients who have had one skin cancer are at increased risk for additional skin cancers.

### BEFORE SURGERY:

1. Medications. Your Mohs surgeon needs to know all of the medications and supplements that you take. Please inform us if you are taking any blood thinning medications. These include aspirin and aspirin-containing products, ibuprofen (Advil or Motrin), warfarin (Coumadin), clopidogrel (Plavix), and others.

These medicines may cause increased bleeding during or after your surgery. Do not stop taking any of these medications without clearance from your primary physician. Certain herbal medications, vitamins, and supplements can also thin the blood. These should be discontinued 7 days before surgery.

2. Medical history. Please inform your Mohs surgeon if you require antibiotics before dental work; if you have an artificial, damaged, or leaky (prolapsed) heart valve; if you have a joint replacement; if you have a pacemaker, defibrillator, or deep brain stimulator.
3. Do not drink alcohol for 2 days before or after your surgery. Drinking alcohol may increase your risk of bleeding.
4. Discontinue smoking at least two weeks before surgery. Smoking definitely interferes with healing of your surgical wound.
5. We want you to feel comfortable about the planned surgery. Ask any questions that you may have about the surgery in advance.

### ON THE DAY OF SURGERY:

1. **Unless you have been instructed otherwise** eat a good breakfast and take your regular medications. If you will need any medications mid-day, bring them with you to your surgery.
  2. Bathe and shampoo your hair. You may need to avoid water near the surgery site for 48 hours.
  3. Wear comfortable clothes that you can easily remove without pulling over your head. A button-up shirt may be easiest.
  4. Be prepared to spend the whole day although the average time is 3-5 hours. Do not plan on doing anything else during the day. Consider bringing something to occupy the time, such as a book.
  5. Plan to have someone drive you home. You may wish to have them as a companion during the day. Do not bring young children with you.
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### AFTER SURGERY:

When the microscope examination is complete and the skin cancer has been completely removed, your Mohs surgeon will discuss management of the surgical wound with you. Each wound is different and you may have several options including:

1. The wound can heal on its own (second intention healing). This process normally takes several weeks, and daily bandaging of the wound will be necessary during this time.
2. The wound can be stitched together. The stitches may be removed in 1 to 2 weeks. Daily bandaging of the wound will be necessary during this time.
3. A skin flap can be used to move healthy skin from near the wound over to cover the wound. The stitches may be removed in 1 to 2 weeks. Daily bandaging of the wound will be necessary during this time.
4. A skin graft may be used to cover the wound. Skin from another location (the donor site) is removed and stitched in place over the wound. The donor site is then stitched together. There are 2 wounds to care for, and antibiotics are often prescribed. One week later, the stitches are removed and the 2 surgery sites are checked.
5. Following any of these options, a scar will be present. Scars do improve with time, and on occasion a second procedure may be needed to help improve the scar. Scars can feel tight or may itch, and they may be red in color due to growth of new blood vessels.
6. In certain cases, another specialist such as a plastic surgeon, oculoplastic surgeon, or otolaryngologist (ear, nose, and throat doctor) may be helpful in managing the surgical wound.

### RECOMMENDATIONS FOLLOWING SURGERY INCLUDE:

1. Follow the recommended wound care instructions. These will be discussed at the end of your procedure.
2. Limited exercise. Please ask your doctor when you can resume your normal exercise routine.
3. Please ask when you can go back to work. Often you can return to work in 1 or 2 days, depending on the nature of your surgery.
4. Be cautious with sun exposure. Use a sunscreen SPF 30 or higher and use protective clothing such as a hat and long sleeves or pants. Avoid mid-day sun between 10 am and 4 pm.
5. Plan regular follow up visits with your dermatologist for skin examinations. These should take place every 6-12 months, sometimes more often depending on the type of skin cancer.

### ABOUT THE STAFF AND FACILITY:

The staff consists of a Mohs surgeon, a resident physician, a nurse, a histotechnician, and a scheduler. These individuals function as a team to provide the highest quality medical care and will interact with patients during their treatment.

The Mohs procedure is performed in a hospital-based, outpatient facility located in the Primary Care Center at the University of Virginia. The Mohs unit at UVA is accredited by the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO) and certified by the Clinical Laboratory Improvement Amendments (CLIA).

### ABOUT THE PHYSICIANS:

**Mark A. Russell, M.D.**, is Associate Professor and Director of Mohs and Dermatologic Surgery in the Department of Dermatology at the University of Virginia Health System. He received his medical degree from the Ohio State University School of Medicine. Dr. Russell completed his residency in Dermatology, and his fellowship in Mohs and Dermatologic Surgery, at Vanderbilt University Medical Center. He completed fellowship training in Dermatopathology at the University of Virginia. Dr. Russell is a fellow of the American Academy of Dermatology, the American College of Mohs Surgery, the American Society of Dermatologic Surgery, and the American Society of Dermatopathology. He is board certified in Dermatology and Dermatopathology.

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