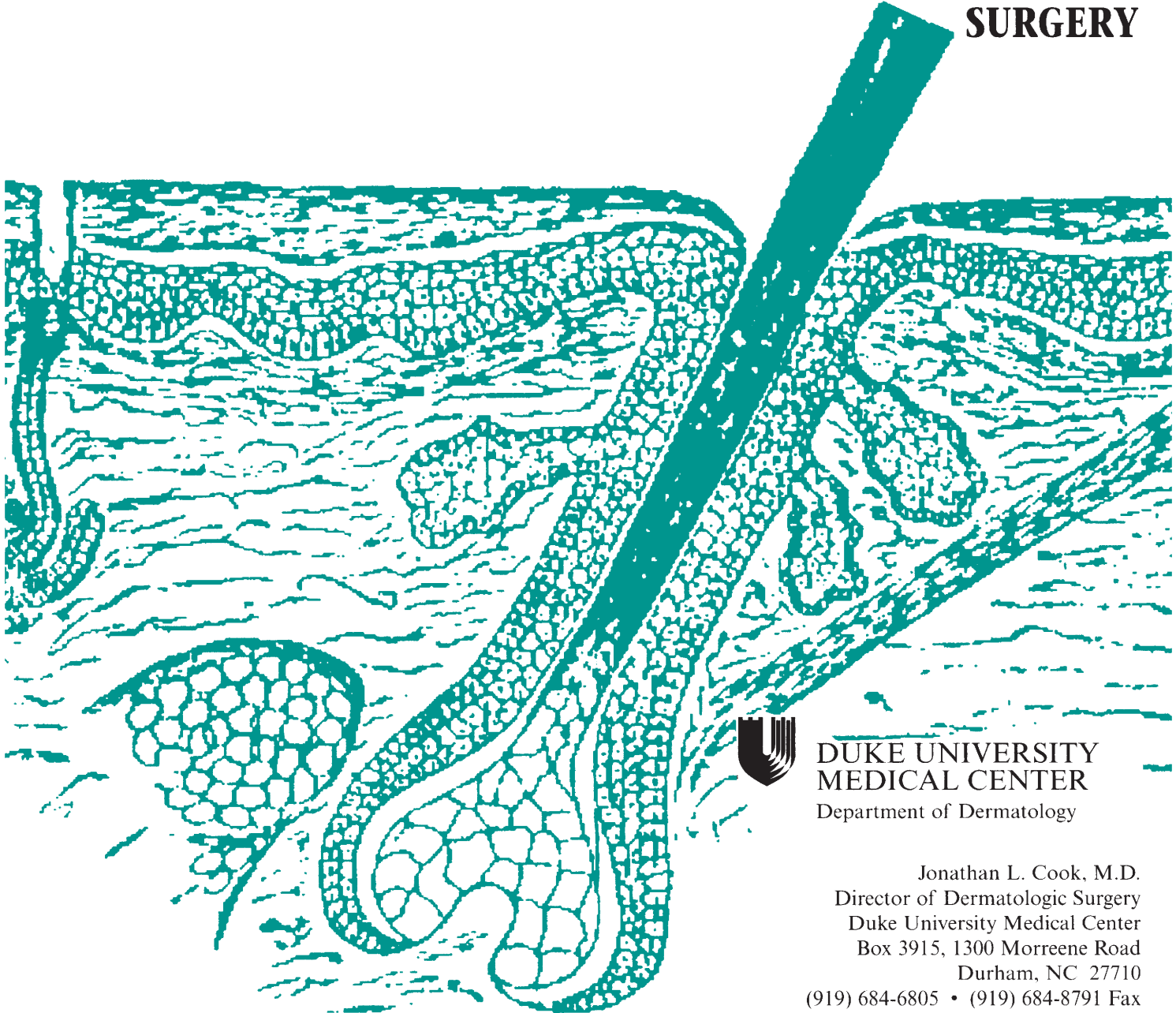


Your Guide to Skin Cancer

and

**MICROSCOPICALLY
CONTROLLED (MOHS')
SURGERY**



**DUKE UNIVERSITY
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INTRODUCTION

The Division of Dermatology at Duke University Medical Center is recognized nationally for the research and treatment of complex skin disorders, including skin cancer. Duke's dermatology division has maintained its lead as a pioneer of new therapies for dermatological disease.

The Dermatologic/Mohs' Surgery Service is a leader in the Southeast for the treatment of skin cancer through the use of microscopically controlled (Mohs') surgery. The Mohs' technique combines surgery with microscopic examination of the tissue to remove non-melanoma skin tumors. With the most advanced equipment to perform the surgery and the expertise of the physician staff, Duke's Dermatologic/Mohs' Surgery Service is on the forefront of patient care.

This guide is intended to answer the questions most frequently asked by skin cancer patients preparing for microscopically controlled (Mohs') surgery for the removal of skin tumors. This information supplements, but does not replace, the consultation between you and your physician. Any concerns should be fully aired and discussed prior to your date of surgery.

REMEMBER – There is no such thing as an unimportant or silly question

“What is Skin Cancer?”

Skin Cancer is not one problem but a collection of separate diseases. There are three common forms of skin cancer:

1. **Basal Cell Carcinoma**
2. **Squamous Cell Carcinoma**
3. **Malignant Melanoma**

Basal Cell Carcinoma is not only the most common form of skin cancer, but it is also the most frequently occurring of all cancers of the body. The name is derived from the skin cell that is growing in an uncontrolled fashion – the basal cell. This is the cell type located at the base or bottom of the upper skin layer – the epidermis. Although the basal cell carcinoma can extensively damage the skin and tissue where it appears, it very rarely spreads to other parts of the body unless its size becomes enormous. It does not spread through the bloodstream and almost never involves the lymph nodes (glands). If a basal cell carcinoma is left untreated, it will possibly destroy any tissue or structure in its path of growth. This is of particular concern when the basal cell carcinoma is located near the eye, ear, or nose. One cannot predict how quickly basal cell carcinomas will grow. Although they are usually slow-growing tumors, basal cell carcinomas can grow rapidly and invade deeply. Basal cell carcinomas initially may have the appearance of a small pimple, a non-healing or bleeding sore, a shiny bump, a cyst, or a larger growth. Discomfort and itching can occur, but these symptoms are uncommon. Unfortunately, any symptoms are not reliable indicators of whether or not the lesion is a skin cancer. The diagnosis of a basal cell carcinoma must be confirmed with a biopsy (a skin sample being sent to a pathology laboratory for microscopic examination).

Squamous Cell Carcinoma can be a more serious skin cancer than basal cell carcinoma. The squamous cells are located above the basal cell layer in the epidermis, the outer layer of skin. Although squamous cell carcinoma can also cause excessive tissue destruction, this tumor may also spread to the nearby glands or lymph nodes. Uncommonly, the cancer can also travel through the bloodstream to distant areas of the body. Squamous cell carcinoma usually appears as a rough, scaly area of skin or a larger growth/bump.

Malignant Melanoma, which often looks like a brown or black patch, or an unusual mole, is potentially the most serious form of skin cancer; however, because microscopically controlled surgery is only emerging as a potential form of treatment for invasive melanoma, it will not be discussed further in this material. Please discuss any questions concerning the treatment of malignant melanoma with your Mohs’ surgeon.

“Why Did I Get Skin Cancer?”

Unfortunately, we do not know many of the factors that cause skin cancer; however, skin cancer does occur more frequently in people with fair complexions (blonde hair, blue eyes), individuals of Celtic descent, and those who have received extensive exposures to the sun. Accumulated exposure to the damaging ultra-violet radiation of the sun over many years may change normal cells of the skin into cancer cells. This is why areas of the body exposed constantly to the sun (the face, hands) tend to be more prone to skin cancer than sun-protected areas. Nonetheless, sun exposure is not the entire answer to the origin of skin cancer. Dark-skinned individuals who hide from the sun can still develop skin cancer.

Other factors such as heredity and environmental agents may also play some role.

“How Can I Protect Myself From Developing Future Skin Cancers?”

The only factor that you can control is your continuing exposure to the sun. Proper use of sunscreen with a **Sun Protection Factor (SPF)** of 15 or greater is the most important preventive measure. You can also wear broad-rimmed hats or protective clothing if desired. You do not have to change your lifestyle – only use caution and sun protection.

“How is Skin Cancer Treated?”

Skin cancer can be treated effectively by a variety of methods, including traditional surgery, plastic surgery, desiccation and curettage (scraping and burning), freezing (cryosurgery), X-ray (radiation therapy) and Mohs’ (microscopically controlled) surgery. The treatment of each skin cancer must be individualized, taking into consideration such factors as the patient’s age, location of the cancer, type of cancer and whether or not the cancer has been previously treated. In some instances, more than one type of skin cancer therapy may be appropriate. Your physician will discuss treatment alternatives with you at the time of consultation.

“What is Microscopically Controlled (Mohs’) Surgery, and Why Has My Physician Chosen this Form of Treatment?”

Microscopically controlled surgery was developed by Dr. F. Mohs in the 1940s as a precise method of treating certain skin cancers. The technique has been extensively refined in subsequent years, and its popularity has increased dramatically during the last decade. It combines surgical removal of the skin cancer with immediate microscopic examination of the removed tissue in order to identify any residual cancerous tissue.

There are several situations in which Mohs’ surgery is appropriate.

1. When the tumor occurs in an area of the body where it is not effectively curable by other methods.
2. When the tumor is located on a structure that is so important that one wishes to remove only the diseased tissue and spare as much of the normal skin as possible (e.g., the nose, the eyelid, the ear).
3. When the cancer has been previously treated and has come back.
4. When the margin or extent of the tumor cannot easily be defined by visual inspection.

Mohs' surgery not only has the highest cure rate of all treatment methods, but it creates the smallest possible surgical wound, permitting the best cosmetic result.

Unlike other methods of treatment, Mohs' surgery does not rely on surface inspection to judge the extent of the skin cancer. What one sees on the surface may only be "the tip of the iceberg." If the tumor is not well defined, if it blends into the normal skin, or if it is mixed with scar tissue from a previous operation, a surgeon might either remove too little tissue and leave tumor behind or over-compensate and remove too much. This could produce tumor recurrence of unacceptable scarring. Mohs' surgery, using microscopic control, allows the surgeon to trace out the extent of the tumor and remove **only** diseased tissue.

"What Does Mohs' Surgery Involve?"

Mohs' surgery is a minor surgical procedure normally performed on an outpatient basis in the office. ***Be prepared to spend the entire day***, although 3-5 hours is the average time required. Eat a full breakfast and bring some reading material. It is also important to bring a friend or family member along. Although you will be physically able to drive yourself home, you may be tired and have some swelling. The surgery is performed in steps or stages. Each stage involves about 15 to 20 minutes of surgery to remove the cancerous tissue plus about one hour to microscopically check if any skin cancer remains. The number of steps or stages

required depends upon the size and depth of the cancer.

The actual procedure is as follows:

1. A local anesthetic will be injected into the area of surgery. This is the only part of the surgery that will cause any discomfort – the sensation of stinging or burning. The pain is typically quite mild and very easily tolerated.
2. Once the cancer and the surrounding areas are numb, a smaller layer of tissue will be removed. Unless the cancer is quite small, more surgery is almost always required. ***Remember, it is always better to initially remove too little and perform a second stage than to remove more normal tissue than necessary.***
3. The small amount of bleeding will be stopped with a machine that coagulates the blood vessels, a dressing will be applied, and you will return to the waiting room.
4. The tissue will be brought to the laboratory, where it is processed. Microscopic slides are prepared by a technologist and examined by your physician to determine if the cancer is persistent.
5. If microscopic examination by your surgeon reveals remaining tumor, a map is drawn indicating the precise location.
6. You are then brought back to the operating suite, and additional anesthetic is injected to reinforce the first injection. In most cases, the initial anesthetic has not entirely worn off, and you will feel little or no discomfort.
7. The second stage now involves the removal of another layer of tissue – but

only where the map indicates residual cancer. The healthy tissue is left alone; only the diseased tissue is excised.

8. This tissue is brought to the laboratory and the process is repeated until all evident cancer is removed.

The average tumor requires two to four stages for removal. Do not be discouraged if your cancer is not removed in one step. We are tracing the extent of the tumor very carefully and trying hard not to remove any uninvolved normal tissue. This must be done in small layers.

“What Happens After Surgery?”

When the surgery is complete, there will be a defect or open wound in the area that the skin cancer occupied. There are then three alternatives:

1. The wound can be allowed to heal by itself. The time of healing depends on the size of the defect. In some areas of the body, wounds allowed to heal by themselves produce very acceptable cosmetic results.
2. In many other areas, the wound is often closed with sutures to avoid distortion or unacceptable scarring of the skin. Occasionally, a small graft of skin from behind the ear or a transfer of excess skin from nearby (a flap) is required. These procedures can produce excellent cosmetic results.
3. If the wound is very extensive you may be required to obtain consultation with other physicians in order to ensure the

most appropriate reconstruction of your wound. Our office will arrange these consultations in the unlikely event that they are necessary.

“How Do I Care for My Wound After Surgery?”

Regardless of whether or not your wound is sutured you will need the following items to clean your wound.

1. Q-tips
2. 3% Hydrogen Peroxide and/or saline solution.
3. Antibiotic ointment (Polysporin or Bacitracin)
4. Telfa gauze or other non-adhesive surgical dressing
5. Paper tape (e.g., Micropore)

Please follow these steps when you clean the surgical area:

1. Clean the wound thoroughly but gently with a cotton applicator (Q-tip) dipped in hydrogen peroxide or saline solution as directed.
2. Use a second, clean Q-tip to dry the area.
3. Use a third Q-tip to apply antibiotic ointment to the wound.
4. Cover with Telfa (“No-Stick”) gauze cut to the size of the wound. Secure with non-allergic Micropore paper tape.

“Will There Be Any After Effects of My Surgery?”

Discomfort, if it should occur with this procedure, is usually very mild and can be managed with ordinary Tylenol. Do not take aspirin or aspirin-containing products (Excedrin, Anacin, etc.), as they can promote bleeding. A pressure dressing applied to the wound should be left on one day to minimize swelling and bleeding. Although some minimal bleeding is typical, brisk bleeding after surgery is infrequent. However, if brisk bleeding occurs, lie down, take some gauze or a dry washcloth and apply firm pressure for twenty minutes (by the clock) on the wound. Do not remove the pressure prior to this. If the bleeding persists, go to the nearest emergency room and call your physician.

Other problems that are infrequent include black and blue marks and swelling. These problems can particularly occur around the eyes, and they may last up to three weeks. Rarely, if the skin cancer involves nerves of the skin, surgical removal can lead to numbness or muscle weakness in the area. This usually resolves within 8 to 12 months, but the numbness may occasionally be permanent.

Remember, **every** surgical procedure produces scarring of some type. Although every attempt will be made to minimize and hide the scar, the extent of scarring depends on the size and depth of the cancer.

The main goal of Mohs' surgery is to remove skin cancer as completely as possible and to prevent recurrence. Although the cure rate is not 100%, it offers the highest cure rate of any procedure available in the treatment of skin cancer. The overwhelming majority of patients never require further treatment.

Please remember, this information provides a general guide to skin cancer and Mohs' surgery. Please consult your physician if any questions arise.

Pre-Surgical Check-List

1. Eat a normal meal prior to surgery.
2. Bring along some reading material.
3. Have a friend or relative accompany you or at least drive you home.
4. Refrain from taking aspirin or alcohol one week before and one week after surgery.
5. Consult your physician to try to eliminate any medications that would promote bleeding for a similar period (e.g., Motrin and other aspirin-like medications, coumadin, heparin).
6. Purchase the following:
 - Q-tips
 - 3% Hydrogen Peroxide and/or saline solution
 - Antibiotic ointment (Polysporin or Bacitracin)
 - Telfa gauze
 - Paper Tape (e.g., Micropore)

For More Information

For more information about Mohs' surgery or to make an appointment, please call the Duke University Dermatologic/Mohs' Surgery Service at 919/684-6805.

Jonathan L. Cook, M.D. is the Director of Dermatologic Surgery at Duke University, where he is an Assistant Professor of Medicine (Dermatology) and Surgery. Dr. Cook is a native of Southwest Virginia/Northeast Tennessee. He completed his undergraduate education at the College of Charleston (valedictorian), and he received his medical degree from the Medical University of South Carolina (valedictorian). Following medical school, Dr. Cook completed an internship at the Harvard Medical School (New England Deaconess Hospital) and a residency in dermatology at Emory University. He pursued his fellowship training in Mohs' and dermatologic surgery at the University of Pennsylvania, the oldest dermatology department in the United States and a center internationally known for excellence in the surgical management of skin cancer. Following this fellowship, Dr. Cook became an Assistant Professor of Dermatology at the University of Pennsylvania, where he was also chief of the department's satellite practice program. Dr. Cook is board certified in dermatology

Services

- Mohs micrographic surgery for primary and recurrent skin cancer
- surgical excision of benign and malignant skin lesions
- management and surgical excision of melanoma
- cryotherapy for benign and malignant skin lesions
- surgical treatment of nail disorders
- UltraPulse CO2 laser treatment for wrinkles, acne scars, and sun-damaged skin
- pulsed-dye laser treatment for birthmarks, age spots, and tattoos
- keloid treatment and management
- dermabrasion for acne scars
- collagen injections for wrinkles and scars
- chemical peels for photoaged and photodamaged skin
- hair transplantation

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