You have been referred to our office for Mohs Micrographic Surgery. Below are some frequently asked questions by patients undergoing Mohs Surgery. Please read through the questions and answers. While all of your questions may not be answered, the following information is designed to make sure the surgery day is easier.

**What is Skin Cancer?**

Cancer is an abnormal growth of cells at an uncontrolled and unpredictable rate. The cancer tissue usually grows and destroys the surrounding normal tissue. The most common cancers that occur in the skin are basal cell carcinoma, squamous cell carcinoma, and malignant melanoma. The names refer to the skin cell from which the particular type of skin cancer originates.

In the Mohs Surgery Unit, we use microscopically controlled surgery to treat basal cell carcinoma, squamous cell carcinoma, and some much rarer skin tumors.

Compared to other types of cancer, skin cancers are visible and can be readily identified in the early stages. They are, therefore, more easily cured.

**Need for Biopsy**

In addition to the several different types of basal cell carcinoma and squamous cell carcinoma, there are other growths, or lesions, on the skin that resemble these malignancies which may be benign. It is, therefore, essential to identify the lesions prior to treatment, as different therapies for each may be indicated. For this reason, a biopsy is performed prior to administering treatment of any kind.

**Malignant Melanoma**

Malignant melanoma is a skin cancer which may be life threatening if not treated early. Fortunately, this cancerous growth is far less common than basal cell carcinoma and squamous cell carcinoma. It usually appears as a small brownish-black or larger multicolored patch, plaque or nodule with an irregular border. Sometimes the surface will crust or bleed. Melanomas occasionally originate in moles, which have been present since birth.

You should inspect your skin regularly and become familiar with all spots and moles. Pay special attention to their sizes, shapes, edges and color.
**Know the Signs of Skin Cancer**

If you have any of these symptoms, you should make an appointment for a checkup at once.

- A skin growth that increases in size and appears pearly, translucent, tan, brown, black or multicolored.
- A mole, birthmark or beauty mark that:
  - changes color
  - increases in size or thickness
  - changes in texture
  - is irregular in outline
- A spot or growth that continues to itch, hurt, crust, erode or bleed.
- An open sore or wound on the skin that does not heal or persists for more than four weeks, or heals and then reopens

**What Causes Skin Cancer?**

**Sunlight**

Unlike other forms of cancer, the cause of skin cancer is known. Excessive exposure to sunlight is the single most important factor associated with the development of skin cancers appearing on the face (the most common site) and other sun-exposed parts of the body. Fair skinned people develop skin cancer more frequently than dark-skinned people do, and it is rare in blacks skin. Geographic location is also a factor, with an increased incidence occurring in areas of high sun exposure.

Skin cancer also tends to be hereditary and occurs very frequently in certain ethnic groups, especially those with fair complexions, such as Northern Italians and Celts (especially Irish). These individuals usually sunburn easily and tan poorly.

**Other Causes**

Superficial X-ray, which was used many years ago as treatment for certain skin diseases, has sometimes been the cause of skin cancers occurring many years later. Routine X-rays, such as chest and dental X-rays, do not cause skin cancer. Indoor tanning, trauma (burns or scars), certain chemicals, and rare inherited diseases may also contribute to the development of skin cancer.

**How May Skin Cancer Be Treated**

There are several treatments for skin cancer, all highly successful in the majority of patients.

These methods include excision (surgical removal) and suture (sewing); curettage and electrodesiccation (scraping and burning with an electric needle); cryosurgery (freezing); radiation therapy (X-ray); and Mohs Micrographic surgery (microscopically controlled excision). The method chosen depends on several factors, such as the location of the cancer, its size, and previous therapies.
What is Mohs Micrographic Surgery?

In the early 1940’s, Dr. Frederic Mohs, Professor of Surgery at the University of Wisconsin, developed a form of treatment for skin cancer, which he called chemosurgery. (The word ‘chemosurgery’ is derived from the words ‘chemical’ and ‘surgery’.) The technique has undergone many refinements and came to be known as “Mohs Surgery” in honor of Dr. Mohs. Chemicals are no longer used. The term Mohs Micrographic surgery was first published by Dr. Hanke in 1985 to indicate the tissue mapping (“graphic”) and specialized microscopic examination (“micro”) that are done. The shortened term Mohs surgery is often used.

Mohs surgery is a highly specialized treatment for the total removal of skin cancer, in which the microscope is used to determine the extent of the tumor and its location.

Surgical Procedure

The surgery is performed as follows: The skin that is suspicious for cancer cells is treated with a local anesthetic so that there is no feeling or pain in the area. To remove most of the visible skin cancer, the tumor is scraped using a sharp instrument called a curette. A thin piece of tissue around the scraped skin is then removed surgically and is carefully divided into pieces that will fit on a microscope slide.

Examination of Tissue

The edges of the tissue are then marked with specially colored dyes; a careful map or diagram of the tissue removed is made, and the tissue is frozen by the histotechnician. Thin slices can then be made from the frozen tissue and are examined by your surgeon under the microscope. Most bleeding is controlled using pressure and other routine measures; occasionally a small blood vessel is encountered which must be tied using suture material. A pressure dressing is applied, and the patient is asked to wait in the reception area while the slides are being processed.

Your surgeon will then examine the slides under the microscope and determine if any tumor is still present. If cancer cells remain, he is able to determine the number of cells and the exact location. Another layer of tissue is then surgically removed, and the procedure is repeated until the surgeon is satisfied that the entire base and side of the wound have no cancer cells remaining. As well as ensuring total removal of the cancer, this process preserves as much normal, healthy, surrounding skin as possible. The goal is to remove the cancer while creating the smallest possible loss of normal tissue.
**Duration of Surgery**

The removal of each layer of tissue takes approximately one or two hours. Only 20-30 minutes of that time is spent in the actual surgical procedure, the remaining time is required for slide preparation and interpretation. Removal of two or three layers of tissue (called “stages”) is usually required to complete the surgery. Therefore, if begun early in the morning, Mohs surgery is generally completed in one day, or part of a day. Occasionally however, a tumor may be extensive enough to necessitate continuing surgery a second day.

**Rate of Cure**

In summary, by microscopically pinpointing areas involved with cancer and selectively removing these tissues, your surgeon can successfully remove your skin cancer. Using this technique, the cure rate is very high, often 95-99 percent, even if other forms of treatment have failed. However, no one can guarantee a 100 percent cure rate.

Because normal tissue is preserved to the greatest extent possible, Dr. Hanke and Dr. Petersen are also able to offer you the best possibility of a good cosmetic result, and every effort will be made to minimize the scar.

**What Are The Advantages of Mohs Micrographic Surgery?**

Mohs Micrographic surgery ensures complete removal of the skin cancer while preserving as much normal skin as possible. It is done as an office surgical procedure, which eliminates the necessity of operating room or hospital fees.

Additionally, Mohs surgery is safe, reliable and has a significantly higher cure rate (95-99 percent) than any other available technique, even when dealing with the most difficult cases.

**How Do I Prepare For The Day of Surgery?**

Because you can expect to be with us for several hours, it is wise to bring a book or a magazine to read. Also, because the day may prove to be tiring, it is advisable to have someone accompany you on the day of the surgery to provide companionship and to drive you home.

The best preparation for Mohs surgery is a good night’s rest followed by a normal breakfast. Please do not consume any aspirin or aspirin-containing products, ibuprofen, onions, garlic, vitamin E or liquor (including beer or wine) two weeks prior to your appointment. All of the above cause thinning of the blood. If you are taking aspirin per your doctor’s orders, please check with the prescribing physician before discontinuing any of your medications. If you are taking any over-the-counter medications, please check with your pharmacist to see if they contain aspirin or aspirin-derivatives.

You should take your daily medications as usual on the morning of surgery. Please bring a list of all medications that you are taking.
**What Happens On The Day of Surgery?**

Appointments for surgery are usually scheduled early in the day to allow us to finish that same day. You will be placed on the examining room table, and the area around your skin cancer will be anesthetized (numbed) with a local anesthetic. This step may be slightly uncomfortable for a few seconds, but usually this is the only discomfort you will experience during the procedure. Once the area is numbed, a thin layer of tissue will be removed and the bleeding controlled. The tissue will be mapped, color-coded, and sent to the on-site Mohs laboratory to be processed into frozen section microscope slides.

A pressure dressing will be placed over the area, and you will be escorted to the reception area. On average, it takes an hour for the slides to be prepared and studied. The nursing personnel will tell you before you leave the surgery room how long it will be before you will be called back to the exam rooms. During this time you may wait in the reception area and read your book or magazine. Please plan to be available in the reception area at the time the nursing personnel tell you, so we can serve you as efficiently as possible. For snacks and/or lunch, the St. Vincent Waterfall Café is located at the main entrance of the hospital. In addition there are restaurants on the opposite side of Meridian Street (across from St. Vincent Carmel Hospital). Please remember that the time the nurse will tell you is only an approximation. Occasionally tissue requires special attention and will take longer for the histotechnician to process.

Most Mohs surgery cases are completed in two or three stages. Each stage involves the removal and microscopic examination of your skin for cancer. Therefore, the majority of cases are finished before noon. Once your surgeon is confident that the skin cancer has been totally removed, he will make recommendations for dealing with the surgical site.

**What Can I Expect After The Surgery?**

**Pain**

You will experience very little, if any discomfort after your surgery. Again, we request that you do not take aspirin or ibuprofen, but use Tylenol or a Tylenol-like painkiller (Datril). Rarely will it be necessary for the physician to prescribe a stronger pain medication.

**Bleeding**

Rarely does bleeding occur following surgery. If this should happen, the bleeding can usually be controlled by the use of pressure. You should lie down, and apply constant pressure on a gauze pad over the bleeding point for 20 minutes; do not lift up or release the pressure at all during that period of time. If bleeding persists after continued pressure for 20 minutes (timed), repeat the pressure for another 20 minutes. If this fails, call Laser and Skin Surgery Center or proceed to the nearest hospital emergency room.
Complications
There are some minor complications, which may occur after Mohs surgery. Infection is rare. A small red area may develop surrounding your wound. This is normal and does not usually indicate infection. However, if the redness does not subside in two days or if the wound begins to drain pus, you should notify us immediately. Itching and redness around the wound, especially in an area where adhesive tape has been applied, are common. When this occurs, ask your pharmacist for a non-allergenic tape and inform us on your return visit.

Swelling and slight bruising are common following Mohs Surgery, especially when it is performed around the eyes. These conditions usually subside within four to five days after surgery and may be reduced by sleeping with your head slightly elevated and by using an ice pack for short periods of time during the first 24 hours.

At times, the area surrounding the operative site will be numb to touch. This area of anesthesia (numbness) may persist for several months or longer. In rare instances, it may be permanent. If this occurs, please discuss it with your surgeon at the follow-up visit.

Restrictions
Depending on the size and location of the wound, your surgeon may recommend restricted physical activity for a day or more. Details will be discussed with you.

What Happens After The Tumor Has Been Removed?
Almost all patients are photographed upon completion of Mohs surgery. These photographs become part of your medical record and may be used for teaching purposes.

After Mohs surgery, you will have a surgical wound. This wound will be dealt with in one of several ways. Your surgeon will discuss with you the options that will provide the best cosmetic results without disguising the small possibility of a recurrence.

The possibilities include:

- Healing by second intention
- Closing the wound, or part of the wound, with stitches
- Closing the wound with a skin flap or skin graft
- Arranging a consultation with one of several reconstructive surgeons.
What is Healing by Second Intention?

Healing by second intention involves allowing the wound to heal by itself. This offers a good chance to observe the wound as it heals after removal of a difficult tumor. Experience has taught that there are certain areas of the body where nature will heal a wound nicely as a further surgical procedure. Sometimes a wound will be left to heal by second intention, with the knowledge that if the resultant scar is unacceptable, some form of reparative surgery can be performed at a later date.

If the wound is allowed to heal by itself, the dressing must be changed every day until healing is complete. All wounds normally drain, and dressings are changed daily to absorb the drainage. The nursing staff will teach you how to change the dressing and will give you printed instructions.

If the wound is allowed to heal by second intention, it usually heals in four to eight weeks, depending on the size of the wound and on how quickly an individual tends to heal. When healing is well advanced, you will be permitted to stop the daily dressing changes. You may experience a sensation of tightness (or drawing) as the wound heals but this is normal. After several months, the tightness will resolve.

Frequently, tumors involve nerves, and may take up to a year, or even two, before feeling returns to normal, or near normal. Occasionally the area stays numb permanently. The skin that grows over the wound contains many more blood vessels than the skin that was removed. This results in a red scar, and the area may be sensitive to temperature changes (such as cold air). This sensitivity improves with time, and the redness gradually fades.

Patients frequently experience itching after their wounds have healed. This occurs because the new skin that covers the area does not have as many oil glands as previously existed. Plain petroleum jelly will help relieve the itching.

What Happens If The Wound Is Closed With Stitches?

Wounds are often closed with stitches. This involves some adjustment of the wound and sewing the skin edges together. The procedure speeds healing and can offer a good cosmetic result. For example, a scar can be hidden in a facial line or a wrinkle line.

The nursing personnel will teach you how to change the dressings daily and provide you with printed instructions. If an odd-smelling fluid oozes from the wound, call the Laser and Skin Surgery Center immediately.

The stitches will remain in place for five to seven days. While the stitches are in place, it is important to keep the area clean and refrain from activities that might pull on the sutures.
**Will There Be a Scar?**

Yes. Any treatment for skin cancer will leave a scar. Mohs surgery preserves as much normal skin as possible, resulting in a scar that is as small as possible.

**How Often Do I Return For A Follow-Up Visit?**

A follow-up period of observation for at least five years is essential. Your surgeon may need to see you within one to two months after your surgery. How often you will need to return will depend on your specific case. In many instances, patients return to their own physician for follow-up visits. The nursing staff and/or your Mohs surgeon will tell you after your surgery how often you will need follow-up visits and which physician to see.

**Will I Develop More Skin Cancers?**

Studies have shown that once you develop a skin cancer, there is a possibility that you will develop others in the years ahead. The damage that your skin has already received from the sun cannot be reversed. However, several precautions, which involve good common sense, can be taken to prevent further skin cancers.

1. Avoid sun exposure from 10:00a.m. to 3:00 p.m. (May to September in Indiana)
2. Apply a sunscreen with a SPF of 15 or greater, half an hour before going outdoors, and reapply as directed on the product label.
3. Wear protective clothing, including a broad-brimmed hat and ultraviolet blocking sunglasses.
4. Stay away from tanning salons.
5. Don’t forget to use your sunscreen on overcast days. The sun’s rays are as damaging to your skin on cloudy, hazy days as they are on sunny days.
6. Use a sunscreen while at lower latitudes. The sun is stronger near the equator where the sun’s rays strike the earth most directly.