

Mohs Micrographic Surgery to Treat Skin Cancer

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Skin cancer is the most common cancer type in the United States and its incidence is increasing at a rate of 5% - 10% each year. Estimates for 2004 predicted there would be more skin cancers (1.35 million) than all other cancer types combined (1.2 million). Mohs micrographic surgery (Mohs surgery) is the most accurate procedure for treating basal cell carcinoma and squamous cell carcinoma, the two most common skin cancers. By removing only the cancerous tissue, Mohs surgery spares the surrounding healthy skin and minimizes scarring.



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Types of Skin Cancer

Basal Cell Carcinoma is the most common skin cancer with an incidence of over 1 million cases every year. Although this type rarely metastasizes (spreads to other parts of the body), it can spread under the skin and cause considerable local damage. Left untreated basal cell carcinoma can invade nerves, muscle, cartilage, and bone. It rarely causes death.

Squamous Cell Carcinoma is the second most common skin cancer, with over 250,000 new cases each year and approximately 2,500 deaths each year due to metastasis. When found early and treated properly, the cure rate by dermatologic surgery for both basal cell and squamous cell carcinomas is 95% - 99%.

Malignant Melanoma is a less frequent skin cancer, with 55,000 new cases each year, but more deadly with approximately 8,000 annual deaths. Mohs surgery is not commonly used to treat this type of skin cancer because melanoma cells spread out under the skin in a pattern not easily tracked by the Mohs technique. Melanoma is almost always curable with surgery when detected in its early stages.

Treatment of Skin Cancer with Mohs Surgery

Mohs Micrographic Surgery (Mohs surgery) is a specialized, highly effective method to remove skin cancer. This procedure was pioneered by Dr. Frederic Mohs at the University of Wisconsin in the 1930s, and has been refined and perfected for more than half a century. Mohs surgery is now used throughout the world to treat new and recurring skin cancer.

The Mohs surgery technique is unique in treating skin cancers because it allows for immediate and complete microscopic examination of the removed cancerous tissue. The deep “roots” and extensions of the cancer are eliminated in a layer-by-layer methodical manner, checking each step under a microscope, and leaving healthy tissue unaffected. Because of this careful approach, Mohs surgery has the highest reported cure rates of any method used to treat skin cancer.

This procedure is most commonly used in treating the two most common types of skin cancer: basal cell carcinoma and squamous cell carcinoma, with cure rates of 99% for new skin cancers and 95% for previously treated cancers arising in scars. Physicians trained in the Mohs surgical technique have specialized skills in dermatology, dermatologic surgery, dermatopathology and Mohs surgery. Additionally, a Mohs surgeon must have the required surgical and laboratory facilities and be supported by a well-trained Mohs nursing and histotechnological staff.

Dr. Daniel Gitter is a Mohs Micrographic Surgeon & Dermatologic Surgeon. He advises that some skin cancers are far more damaging under the skin than they appear to be at the surface.

“Some of these cancers may have ‘roots’ in the skin, blood vessels, nerves or cartilage, so it’s important to examine the depth of the cancerous cells. Also, if skin cancers have recurred, previous treatments may have resulted in extensions deep under the scar tissue. Mohs Surgery is specifically intended to remove these cancers by tracking and removing the cancerous ‘roots,’” added Dr. Gitter.

Indications for Mohs Surgery

It is important to know that Mohs surgery is not appropriate for the treatment of all skin cancers. Most skin cancers of the trunk and extremities and certain head and neck cancers can be treated by simpler, less time-consuming procedures such as electrodesiccation and curettage (scraping and burning of the cancer) or elliptical excision.

Mohs surgery is best utilized to treat skin cancers that have
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recurred following previous treatment, or for cancers at high risk for recurrence. Although it is used primarily for basal and squamous cell carcinoma, Mohs surgery can be used to treat several, other less common tumors of the skin.

Mohs Surgery is considered if:

- skin cancer is recurrent (was diagnosed and treated previously and then returned)
- the skin cancer arises in scar tissue
- there is a need to preserve healthy skin in cosmetically and functionally important areas, such as in the eyelids, nose, ears, lips, or fingers
- the risk of recurrence is high in certain facial regions such as the forehead, temples, and in front of the ears
- the cancer is quite large
- the edges of the cancer cannot be clearly defined
- the cancer is growing quite rapidly or uncontrollably

Mohs Surgical Procedure

Mohs surgery is usually performed as an outpatient procedure in the physician's office using local anesthetics. The patient is awake during the entire procedure, with minimal discomfort (usually). Mohs Surgery requires a specific sequence of surgery and pathological examination. First the visible, obvious skin cancer is removed with a curette or scalpel. Then the Mohs surgeon:

- removes an additional, thin layer of tissue from the original tumor site.
- creates a "map" or drawing of the removed tissue to be used as a guide of the precise location of any remaining cancer cells
- examines the removed tissue through a microscope to thoroughly look for evidence of remaining cancer cells

If cancer cells are present in any of these areas, the Mohs surgeon:

- returns to the specific area of the tumor site (as indicated by the map)
- removes another thin layer of tissue only from the specific area where cancer cells were found under the microscope
- examines the newly removed tissue for additional cancer cells (through a microscope).

If the microscopic analysis still shows evidence of disease, the process continues, layer-by-layer, until the cancer is completely removed. Dr. Gitter says that most Mohs cases can be complete in three or fewer stages, requiring less than four hours.

Reconstruction

A Mohs surgeon is also trained in reconstructive procedures and often will perform the reconstructive procedure necessary to repair the wound. A small wound may heal on its own, or the wound may be closed with stitches, a skin flap or a skin graft. However, if a tumor is larger than initially anticipated, another surgical specialist with unique skills may complete the reconstruction. The best method of managing a Mohs Surgery wound is determined after the cancer is completely removed. When the final defect is identified, the ideal approach can be personalized to achieve the best functional and cosmetic results.

Conclusion

The success of Mohs micrographic surgery is directly related to its unique mapping of excised specimens and thorough microscopic examination at the time of skin cancer removal. This preserves most (if not all) of the surrounding normal tissue and minimizes scarring. In fact, Mohs Surgery has the highest chance for complete removal of the cancer while sparing the normal tissue. The cure rates are better than 99% for newly detected cancers, and 95% for recurrent cancers.

Other resources to learn about Mohs Surgery include:

- American Society for Mohs Surgery - www.mohssurgery.org
- American College of Mohs Micrographic Surgery and Cutaneous Oncology - www.mohscollege.org

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