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Mohs Surgery: The Cutting Edge of Dermatology

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Mohs Surgery: The Cutting Edge of Dermatology

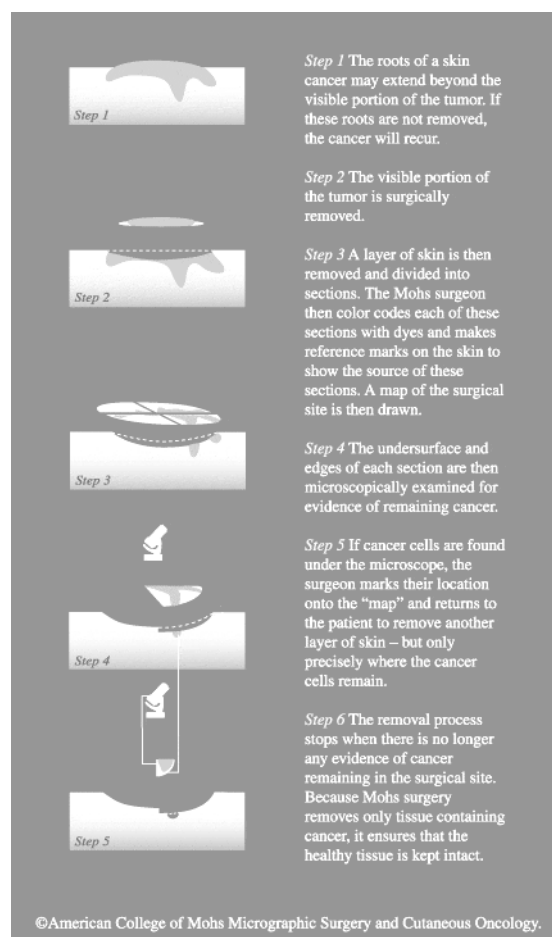
Christine Shaver

Recently, my friend noticed a small bump on his scalp, well hidden in his hair, which did not seem to be going away. Having heard public service announcements about skin cancer, the fact that the small bump would occasionally bleed, scab over, but never really heal seemed worrisome. A trip to a dermatologist led to a biopsy and a diagnosis of basal cell carcinoma. Fortunately, the prognosis is excellent for a patient if the basal cell carcinoma is removed. While there are multiple methods for removing carcinomas, a technique called Mohs surgery was used in this case, and this article will explain more about the procedure.

Mohs surgery highlights the interesting combination of skills that a dermatologist will use in an office setting to result in a highly effective method of tumor excision while minimizing the extent of tissue removal.

The Mohs surgical technique was actually discovered by a medical student, Frederic Mohs, in 1938 at the University of Wisconsin-Madison, yet it is still cutting edge in the realm of skin cancer treatment in 2011. Of course, changes have been made over the years to the original technique, but the same principles apply. Essentially, the goal of Mohs surgery is to excise a cancer in its entirety while minimizing removal of uninvolved skin at the tumor margin. The whole procedure will occur with a patient under local anesthetic in the physician's office.

The Mohs procedure can be simplified into a process with a few main steps (figure 1), each of which draws upon knowledge from a different field of medicine, thus requiring the Mohs surgeon to be medically well rounded. First, the Mohs surgeon will use skills in surgical oncology to excise the visible tumor while leaving a border of uninvolved skin of approximately 1mm (a standard skin cancer excision would remove a 5-6mm border around the tumor). The patient remains in a waiting room while the specimen is then prepared, cut on a cryostat into thin slices, stained with hematoxylin and eosin, and visualized under the microscope with an eye that is trained in neoplastic dermatopathology. The surgeon makes a "tumor map" where he diagrams the excised specimen and marks the areas where cancerous cells are observed. In areas containing cancerous cells that extend to the border, more slivers of skin must be removed from the patient and further examined microscopically for neoplastic change. The tumor map is modified and the procedure continues until the Mohs surgeon no longer finds tumor cells in areas removed from the neoplasm's margin. Finally, knowledge of reconstructive surgery is needed to repair the skin defect and allow for proper wound healing. Thus, the physician performing Mohs surgery uses broad medical skills, as he utilizes the fields of pathology, surgical oncology, dermatology, and reconstructive surgery all at once. The cure rate when using Mohs surgery for basal cell carcinoma, the



most common skin cancer, is in the range of 97-99.8%, which is extremely encouraging. When asked about his procedural creation, Dr. Frederic Mohs replied, “The crucial idea of excising the cancerous site layer by layer and systematically examining the undersurface of each excised layer under the microscope by means of frozen sections is so logical that it is surprising that it was not thought of a century ago.”¹

Many agree that the idea is straightforward, but the knowledge needed to perform the procedure can be challenging to find within a single physician. While Mohs surgeons who perform all aspects of the procedure exist, other physicians have opted to take on a team approach to the technique. Some doctor’s offices elect to assemble a small team consisting of a surgical dermatologist, histotechnician, and pathologist, but the team must be well-integrated and all members must work together for the team to operate smoothly.

So how does one become a qualified Mohs surgeon? Currently, Mohs is a subspecialty of dermatology, and those applying for training must complete a dermatology residency. However, this is not what Frederic Mohs envisioned for the future training of Mohs surgeons. Rather, he believed people from all aspects of the medical realm should be able to receive Mohs training, since most of the time dermatologists are often not involved in primary recognition of early cancerous skin lesions. When writing his first book on the technique, Dr. Mohs said, “The book should be useful to physicians who may be called on to treat or advise regarding treatment of skin cancers and other conditions that are described. This includes dermatologists, surgeons, plastic surgeons, otolaryngologists, gynecologists, urologists, proctologists, pathologists, internists, and general practitioners.”² While knowledge of the Mohs surgical procedure is useful for any physician to have, unfortunately, if one desires to become a Mohs surgeon, it is still necessary to obtain certification in dermatology.

REFERENCES

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