

Mohs Micrographic Surgery and Rapid Immunostaining for the Treatment of Malignant Melanoma

Surgeons in the Division of Dermatologic Surgery and Cutaneous Oncology at Penn Medicine are combining advanced Mohs micrographic surgery with rapid immunostaining to better identify and remove melanomas associated with traditional methods of excision.

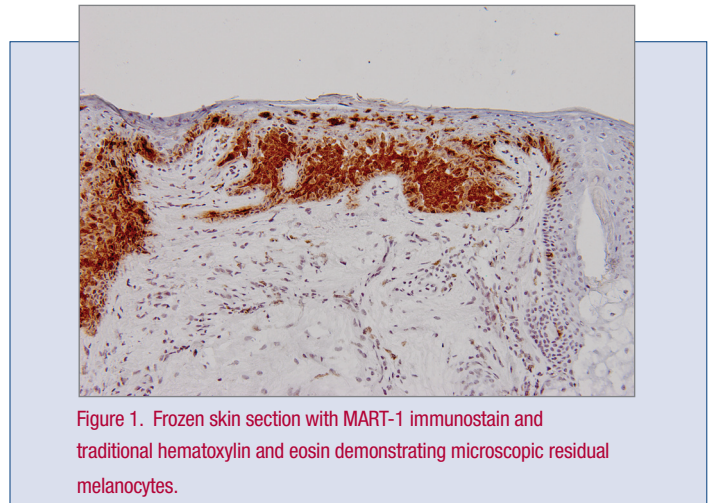
Up to ten percent of melanomas of the head and neck grow back after traditional methods of surgery.¹⁻² By combining Mohs micrographic surgery with rapid immunostaining in the operating room, however, surgeons at Penn are able to detect and remove melanomas that would normally recur after traditional methods of excision. Using this method, fewer than two percent of melanomas recur at the site of surgery (mean 58 months).¹

The fellowship-trained Mohs surgeons and certified histotechnologists at Penn Medicine have developed careful protocols for rapid immunostaining. Rapid immunostaining reduces the risk of performing multiple surgeries for incompletely excised melanomas by permitting surgeons to highlight and detect cancer cells under the microscope during surgery. Because rapid immunostains are as accurate as slower methods of tissue processing,³ moreover, surgeons can perform multiple stages of surgery on the same day. In addition to immunostaining for melanoma, Penn offers a full spectrum of immunostains to track high-risk squamous cell cancers, as well as less common tumors, such as dermatofibrosarcoma protuberans and extramammary Paget's disease.

During Mohs micrographic surgery, all visible melanoma and a margin of clinically normal skin are first excised. The excised skin is then immediately frozen, immunostained and examined under the microscope. If cancer cells are detected at the margin, the Penn Mohs surgeon performs another targeted excision to remove the precise areas where cancer still remains. This process of targeted cancer removal and microscopic examination continues until all the cancer has been excised. Typically, Mohs surgeons at Penn reconstruct the wound on the same day of surgery. Mohs surgery is performed under local anesthesia, which is widely regarded as the safest method of anesthesia available.

CASE STUDY

Mrs. K, a 68-year-old, fair skinned female, was referred to the Division of Dermatologic Surgery and Cutaneous Oncology at Penn for an evaluation following a recurrence of melanoma on her right



cheek. Mrs. K had an extensive history of sun exposure and damage to her skin. Ten years before presenting at Penn, she had a non-Mohs procedure at an outside hospital to remove a superficial melanoma from her cheek. This surgery required three consecutive excisions before it appeared that all the cancer had been eliminated.

A decade later, Mrs. K developed a subtle pink and tan spot around the scar from the previous surgery that, when biopsied, showed a recurrence of the melanoma. Wishing to avoid the risk of multiple excisions and the chance that the cancer would grow back again, Mrs. K's dermatologist referred her to Penn for definitive excision of her tumor with Mohs surgery and same day reconstructive surgery after obtaining clear microscopic margins.

Mrs. K was seen in consultation in the Mohs surgery suite at the Perelman Center for Advanced Medicine. A large amount of background sun-damage was present on her face and the scar on her cheek from the prior excision. The pink and tan areas at the site of the melanoma were very indistinct and hard to distinguish from the pink and tan spots on much of the rest of her cheek.

Mohs micrographic surgery was recommended to clear the incompletely excised melanoma. The Penn Mohs surgeons first carefully outlined all areas suspicious for melanoma. Then, the previous scar was removed and examined with frozen sections stained with MART-1 immunostain and traditional hematoxylin and eosin to evaluate the microscopic residual disease. These procedures found clear evidence of residual melanoma in Mrs. K's skin (see figure 1).

(Continued on back page)

1. Bricca GM, et al. *J Am Acad Dermatol.* 2005;52:92-100; 2. Clark GS, et al. *Cancer Control.* 2008;15:216-224; 3. Cherpelis BS, et al. *Dermatol Surg.* 2009;25:207-213.

(Case Study continued from front)

A peripheral and deep margin of normal skin beyond the edge of the cancer was then excised and examined under the microscope. Twenty-five percent of the margin still contained melanoma in situ. Immediately, Mrs. K had another margin of skin excised around the residual cancer. Examination of the microscopic edge of this specimen was free of cancer (Figure 2).

The Mohs surgeon then reconstructed Mrs. K's wound with a local tissue flap. She returned home the same day. Currently, she is seen on a frequent basis for total skin and lymph node examinations to evaluate for melanoma recurrence and to monitor for newly arising skin cancers. Today, five years after her Mohs surgery, she remains free of any evidence of cancer.

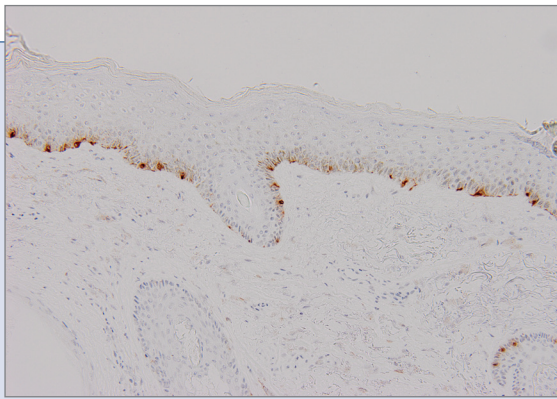


Figure 2. Evenly spaced melanocytes limited to the basal layer of the epidermis and highlighted by brown MART-1 stain.

Team of Faculty

The Division of Dermatologic Surgery and Cutaneous Oncology at Penn Medicine is dedicated to delivering the most current and precise treatments for common and rare malignancies of the skin. Mohs micrographic surgery and reconstructive surgery are performed in modern, comfortable outpatient facilities staffed by fellowship-trained Mohs surgeons, certified histotechnicians, and an expert support staff. A personalized skin care maintenance program is developed for each patient according to his or her individual risk of skin cancer. Preventive treatments and non-surgical treatments for precancerous and early cancerous lesions are also available.

Performing Mohs Micrographic Surgery for Melanoma at the Ruth and Raymond Perelman Center for Advanced Medicine

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Access

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Focus on Melanoma Conference

In May 2011, Penn Medicine hosted its Eighth Annual Focus on Melanoma Conference, a full-day program designed to address the personal and medical issues facing patients with melanoma, their loved ones, and caregivers. The conference provided information on the latest advances in melanoma risk, prevention, diagnosis, treatment, symptom management and psychosocial issues, as well as the opportunity to network and gain support from other melanoma survivors.

Conference presentations, including recent advances in clinical research in melanoma, immunotherapy, surgery and dermatology are available online at:

<http://bit.ly/lmvTke>.

Penn PhysicianLink

Penn PhysicianLink is an exclusive program that helps all referring physicians connect with Penn Medicine. This comprehensive package of support services expedites and facilitates direct physician communication for patient consults, referrals and transfers.

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Call 877-937-PENN (7366) or visit
PennMedicine.org/PhysicianLink.

