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REVIEW

Understanding Mohs Micrographic Surgery: A Review and Practical Guide for the Nondermatologist

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Abstract

The incidence and diagnosis of cutaneous malignancies are steadily rising. In addition, with the aging population and increasing use of organ transplant and immunosuppressive medications, subsets of patients are now more susceptible to skin cancer. Mohs micrographic surgery (MMS) has become the standard of care for the treatment of high-risk nonmelanoma skin cancers and is increasingly used to treat melanoma. Mohs micrographic surgery has the highest cure rates, spares the maximal amount of normal tissue, and is cost-effective for the treatment of cutaneous malignancies. As in other medical fields, appropriate use criteria were developed for MMS and have become an evolving guideline for determining which patients and tumors are appropriate for referral to MMS. Patients with cutaneous malignancies often require multidisciplinary care. With the changing landscape of medicine and the rapidly increasing incidence of skin cancer, primary care providers and specialists who do not commonly manage cutaneous malignancies will need to have an understanding of MMS and its role in patient care. This review better familiarizes the medical community with the practice of MMS, its utilization and capabilities, differences from wide excision and vertical section pathology, and cost-effectiveness, and it guides practitioners in the process of appropriately evaluating and determining when patients with skin cancer might be appropriate candidates for MMS.

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A 57-year-old man with a history of renal transplant and chronic lymphocytic leukemia presents with a recurrent squamous cell carcinoma (SCC) of the lower vermillion lip. The tumor was excised 6 months earlier, and the middle portion of the scar has now ulcerated. A 32-year-old woman with a history of tanning bed use develops a basal cell carcinoma (BCC) on the nasal tip. These patients may be encountered in a primary care office, a transplant or oncology clinic, an obstetrics and gynecology center, or a walk-in urgent care facility.

To better equip a wide range of primary care physicians and specialists to treat patients with skin malignancies with a multidisciplinary approach, we present a guide for nondermatologists to Mohs micrographic surgery (MMS) and its use in skin cancer management. Mohs micrographic surgery has become the gold standard of treatment of cutaneous malignancy, with a focus on tumor eradication and tissue sparing. The aim of this report is to better explain the utility and advantages of MMS and guide medical professionals on the appropriate management of patients with skin cancer.

Among the authors, more than 312,000 MMS procedures have been performed at more than 10 different institutions, including private practices, hospital settings, academic departments, and tertiary referral centers.

Nonmelanoma skin cancer (NMSC) is the most common malignancy in the United States and European countries, with substantial associated morbidity and cost, as well as relatively low but significant mortality. The NMSCs are increasing in incidence and diagnosis.[1-8]

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ARTICLE HIGHLIGHTS

- Mohs micrographic surgery has become the standard of care for the treatment of high-risk nonmelanoma skin cancers and is increasingly used to treat melanoma.
- Mohs micrographic surgery has the highest cure rates, spares the maximal amount of normal tissue, and is cost-effective for the treatment of cutaneous malignancies.
- Patients with cutaneous malignancies, including patients with organ transplant, with hematologic malignancies, and who are pharmacologically immunosuppressed, often require multidisciplinary care.
- Primary care providers and nondermatology specialists should be aware of the possible role of Mohs micrographic surgery in the care of patients with cutaneous malignancies and how to best expedite this care.

Approximately 80% of all NMSCs are BCC, whereas cutaneous SCC (cSCC) represents approximately 20%, and the remaining rare NMSCs represent 1%.[2,9,10] Mohs micrographic surgery is the standard of care for select BCCs and SCCs.[11-13]

The incidence of melanoma (MM) is steadily rising.[14] Recent data and projections show that in the US white population, annual new cases of MM are projected to rise from approximately 70,000 in 2007-2011 to 116,000 in 2026-2031, with 79% of the increase attributable to rising age-specific rates and 21% to population growth and aging.[15] Similar projections have been made about the United Kingdom, Sweden, Norway, Australia, and New Zealand.[15] Melanoma is also the most common cancer in the adolescent and young adult population.[16] The incidence of MM of all thicknesses is rising; however, although the prognosis of MM worsened with increasing stages, most deaths resulted from MMs that were diagnosed at the T1 stage (thin MM).[17] In addition, the long-term risk of subsequent invasive MM increases in patients with melanoma in situ (MIS).[18,19] It is prudent to diagnose and treat MM at an early stage and continue to monitor these patients for subsequent skin malignancies.[18,20] Mohs micrographic surgery has been used with success to treat MIS as well as invasive MM.[21-23]

MMS TECHNIQUE, ADVANTAGES, AND DIFFERENCES FROM TRADITIONAL WIDE LOCAL EXCISION

A complete description of MMS is out of the scope of this article, and some technique variability is seen among surgeons. Basically, the technique involves surgically removing the minimal amount of tissue to eradicate cancerous tissue with precise mapping of the entire surgical margin while preserving normal skin.

The surgical site is clearly marked and infiltrated with local anesthetic. Typically, tumor debulking is done to remove clinically evident tumor with either a blade (sharp debulking) or a curette. A saucerized layer of tissue is excised, with tissue nicks or suture placement for orientation and creation of a corresponding tissue map. The tissue is precisely labeled with ink at nicked edges and transposed to a cryostat chuck with the cut surface flattened.[24] The entire horizontal section of tissue is frozen, cut, and stained, allowing for lateral and deep margin visualization and precise orientation (Figure 1A).[25] Using microscopic examination, the surgeon visualizes the absence or presence of tumor.[26] Once tumor is fully removed, either the site is allowed to heal by second intention (granulation) or an appropriate reconstruction is performed.[25,27] If tumor is still present, a second or subsequent layer is taken only from the represented tumor site on the map corresponding to both the tissue and the patient's defect. This is repeated until tumor is no longer present.[28-30]

The major difference between MMS and wide local excision (WLE) is the fresh frozen technique with horizontal sections, allowing complete margin visualization.[26] In contrast to the complete margin control of MMS, classic histopathology uses a "breadloafing" technique in which tissue is sectioned in a vertical orientation at several intervals (Figure 1B). The amount of tissue visualized depends on the number of sections read. Typically, less than 1% to 2% of the specimen margin is evaluated. Sampling error will occur if the intervals of the sections miss extensions of tumor, which may penetrate between the sampled sections (Figure 1B). Mohs micrographic surgery does not rely on the intervals of sampled margins, instead allowing for microscopic control of 100% of the margin,

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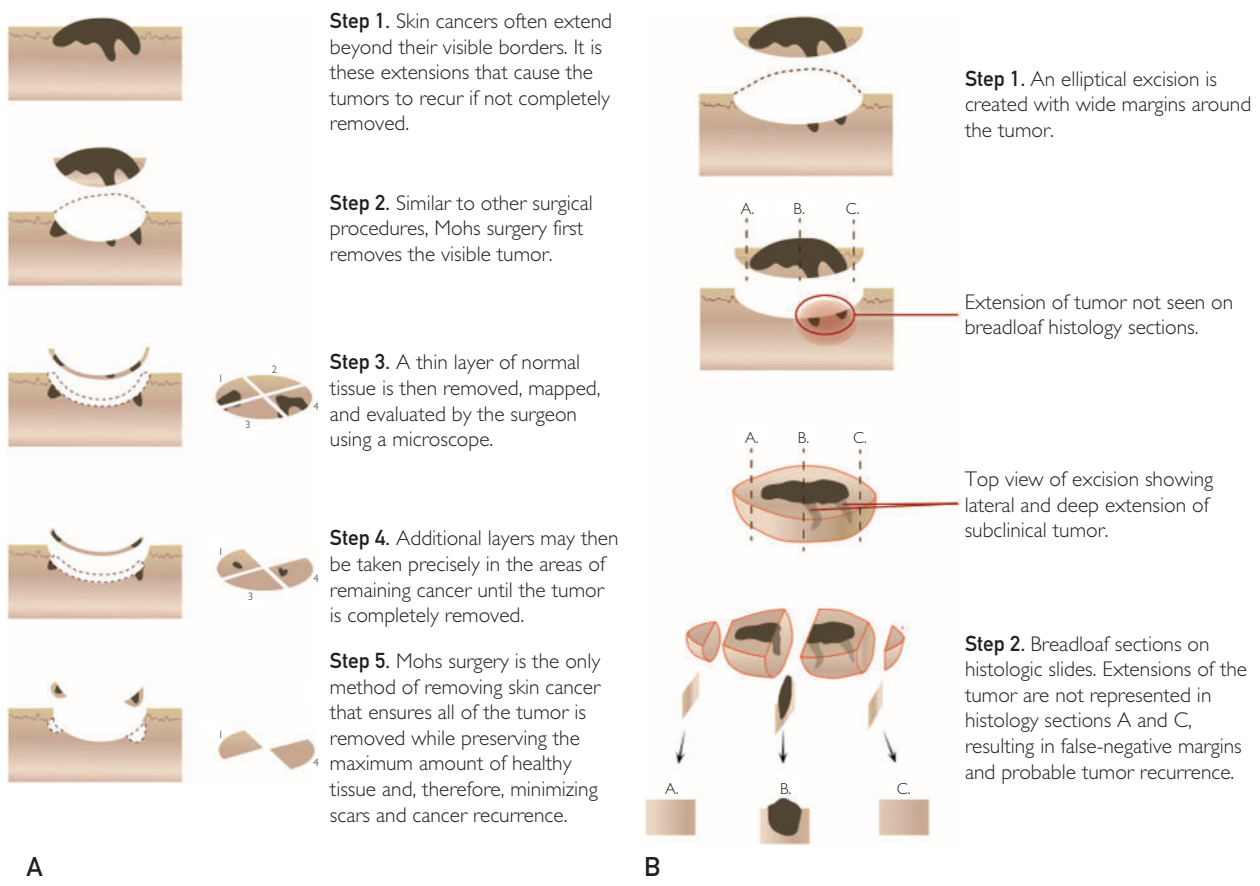

FIGURE 1. A, Mohs micrographic surgery technique. B, Standard technique for wide local excision with breadloaf histology.

translating to both superior cure rates and sparing of normal tissue.[25,26] Tissue sparing with precise mapping allows for potentially more reconstructive options and less disfigurement, especially in cosmetically sensitive areas such as the nose, eyelids, ears, lips, digits, and genitalia.[31,32]

Histopathologic examination is key to the high cure rates achieved with MMS. Most tumors are very effectively examined with hematoxylin and eosin staining. Certain tumors, such as extramammary Paget disease, can better be examined using periodic acid—Schiff staining or cytokeratin 7 immunostaining.[33] Dermatofibrosarcoma protuberans can be further delineated with CD34 immunostaining.[34] Intraepidermal MM cells can be highlighted effectively with Mart-1 or Melan-A immunoperoxidase staining and spindle cell MM with S100.[34] Immunostains can now be done rapidly and efficiently in the MMS laboratory on frozen sections, allowing the surgery to be completed within a few hours rather than days.[35]

THE SYNERGY OF MICROGRAPHIC SURGERY AND RECONSTRUCTION

Micrographic surgery is synergistic with cutaneous reconstruction in several ways. First and foremost, no reconstruction is performed until the margins are confirmed to be histologically tumor free. This is beneficial to both the reconstructive surgeon and the patient because at the time of reconstruction the statuses of the margins are not in doubt. This obviates any need for reoperating at a later date based on subsequent pathology findings. The certainty of clear margins is increased by virtue of the 100% peripheral margin evaluation and the microscopically guided excision afforded by micrographic surgery.

Another synergy associated with micrographic surgery is the reconstruction of the smallest possible wound. Excision using microscopic surgery begins at the narrowest clinically tumor-free margin. Because clinically occult tumor extension exists in approximately 30% to 35% of the tumors, additional excision is necessary for those patients. However, that means that up to 70% of patients achieve histologically tumor-free margins with the narrowest of excision, thereby conserving uninvolved surrounding tissue. Standard excision is based on margin identification using visual inspection only. From that margin, a predetermined, agreed-on by convention, and sometimes clinically verified "safe" margin of normal-appearing skin is removed. These margins range from 4 to 10 mm in NMSC and from 5 to 20 mm of normal-appearing skin in MM. Other less common cutaneous malignancy's margins range from 5 mm to 2 cm depending on the tumor and location.

The depth of excision is also more customized to the actual extent of the tumor using micrographic surgery. With same-day, intraoperative histologic margin evaluation, the fact that more than 95% of cutaneous malignancies are limited to the epidermis and dermis enables the micrographic surgeon to safely preserve underlying soft tissue, including not only subcutaneous fat but also muscles, nerves, and other important structures (Figure 2). Preservation of these tissues simplifies flaps and grafts and improves long-term aesthetic and functional results.

There are times (<1% of cases) when cutaneous malignancies invade beyond the integument into deeper structures such as muscles, tendons, and bone. In these cases, or in cases in which highly complex reconstructions are needed and would be better performed using a multidisciplinary approach, the micrographic surgeon embraces interdisciplinary cooperation.[36] Often, deep structure involvement cannot be anticipated preoperatively. In these cases, the micrographic surgeon can extirpate the entire tumor except that which extends beyond the integument. Residual tumor can be precisely mapped using the micrographic surgical technique and can facilitate subsequent accurate and complete removal of residual malignancy. When a multidisciplinary approach can be anticipated preoperatively, the micrographic surgeon may be instrumental in using intraoperative MMS, allowing for margin control of large tumors, leaving the residual tumor to be excised under general anesthesia.[37] Again, residual tumor can be precisely located using the mapping techniques, which may be useful for subsequent removal. This may allow for simultaneous reconstruction instead of having to withhold reconstruction to observe for recurrence or for confirmation of clearance by permanent sections, which may prevent potential patient morbidity and psychosocial detriment.[36]

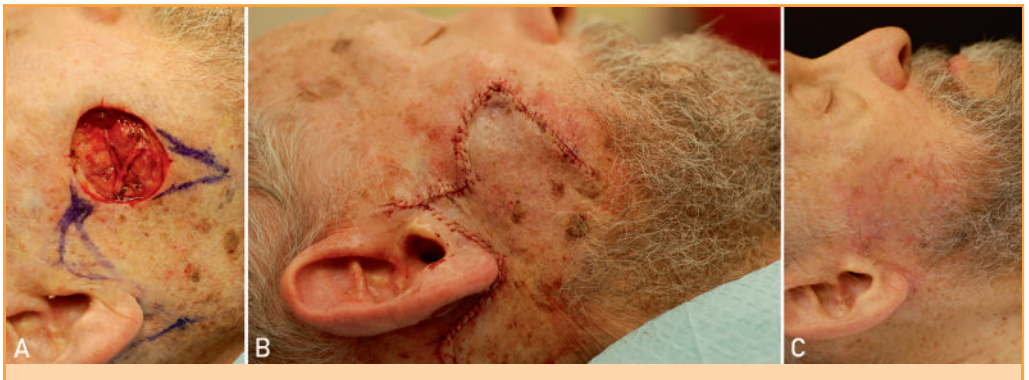

FIGURE 2. A, Post—Mohs micrographic surgery (MMS) defect demonstrating preservation of cranial nerve 7 after perineural extension of squamous cell carcinoma. B, Reconstruction immediately after MMS with a bilobed transposition flap over a subcutaneous flap from the jowl covering the nerve. C, Three-year follow-up with no recurrence, and aesthetic outcome.

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TUMORS TREATED BY MMS AND THEIR CURE RATES

Nonmelanoma Skin Malignancies

Basal cell carcinoma is the most common malignancy in the United States, and although it rarely metastasizes, untreated BCC may continue to grow, with local destruction.[9] Mohs micrographic surgery has been used successfully to treat primary and recurrent BCCs.[11,12] The tumor-free recurrence rates for primary and recurrent BCCs treated with WLE and MMS are outlined in Table 1. Mohs micrographic surgery has been shown to have superior cure rates in primary and recurrent BCCs.[11,12,38] It is also an efficient and cost-effective procedure as the treatment of choice for high-risk BCCs and for those in cosmetically sensitive locations.[9]

Cutaneous SCC makes up a smaller proportion of NMSCs. However, it is estimated that in the United States, 186,157 to 419,543 white individuals were given a diagnosis of cSCC, 5604 to 12,572 developed nodal metastasis, and 3932 to 8791 died of cSCC in 2012.[63] This morality burden is on par with renal and oropharyngeal carcinomas and MM.[63] Treatment of cSCC with MMS has shown superior cure rates to WLE, and local recurrences occur less frequently when cSCC is treated by MMS.[40] In addition, high-risk cSCCs have been better defined by Mohs surgeons working in multidisciplinary settings, which has led to the emergence of sentinel lymph node biopsy and adjuvant radiation considerations in treating this subset of cSCC.[13,63-69]

The concept of margin control with MMS extends beyond common tumors. Almost all types of cutaneous malignancies have been treated by MMS over the decades, all with superior results to WLE (Table 1).[11,12,23,38-62] Although these tumors vary in anatomical structure of origin, they all share 1 crucial aspect: they are contiguous tumors, often with subclinical extension underneath the skin surface, rendering the surgeon's subjective measurement of the tumor margins less efficacious than a micrographic surgeon's ability to assess the margin microscopically.

MMS in the Treatment of Melanoma

Mohs micrographic surgery is a useful technique for cutaneous MM, and its value is highly evidence based. Current surgical margin guidelines for the excision of MM result in recurrences due to inadequate excision, resulting in true local recurrence rates of 9% to 15% on the head and neck and 3% on the trunk and proximal extremities.[22,41] These recurrences may adversely affect prognosis and survival because it has been shown that true local recurrences of MIS appear as invasive MM in 23% of cases.[70] Similarly, true local recurrences of inadequately excised invasive MM appear as more deeply invasive MM in 33% of patients.[43] Therefore, the goal of surgical excision is complete removal with histologically negative margins.

The usual methods of pathology processing of excised MM tissue allow examination of only less than 1% to 2% of the margin. More careful processing is rarely performed but may include methods of en face sectioning to examine a higher percentage of the margin. Mohs micrographic surgery is a method of examining 100% of the margin and allows for mapping the precise location of a positive margin so that reexcision is complete. Mart-1 or other immunoperoxidase stains increase the accuracy of margin examination. The

TABLE 1. Cure Rates (5 Years) for Selected Cutaneous Malignancies

Tumor	Cure rates (%)	
	Mohs micrographic surgery	Wide local excision
Basal cell carcinoma[11,12,38]	99 (primary) 90-93 (recurrent)	87-96 (primary) 83 (recurrent)
Squamous cell carcinoma[38-40]	92-99 (primary) 90 (recurrent)	92-95 (primary) 76 (recurrent)
Melanoma in situ[41,42]	98	83-85
Melanoma (invasive)[23,43]	98.7[a]	97[a,b]
Dermatofibrosarcoma protuberans[44,45]	98-100	80-88
Atypical fibroxanthoma[46]	93-100	88
Merkel cell carcinoma[47]	84-95	68-77
Microcystic adnexal carcinoma[48-50]	90	50-70
Sebaceous carcinoma[51,52]	90-93	63-86
Extramammary Paget disease[53]	92	78
Leiomyosarcoma[54,55]	87-100	55-86
Hidradenocarcinoma[56]	100	50
Trichilemmal carcinoma[57,58]	100	90
Mucinous carcinoma[59]	96	66-71
Porocarcinoma[60-62]	100	80

[a]Same study to correct for bias or operator differences.
[b]Of these 3% of tumors without cure, 33% will reappear with deeper thickness than the original primary tumor.

result of detailed margin examination is published local recurrence rates of 0.2% for head and neck MMs and 0.5% for the trunk and proximal extremities, and metastatic rates and MM-specific survival rates as good as wide excision.[71]

Mohs micrographic surgery can be particularly valuable for most head and neck MMs, hand and feet MMs, genital MMs, and any MM with poorly defined clinical margins, including amelanotic, desmoplastic, and recurrent MMs.

Recurrences from MMS may be tumor related, including aggressive pathology, multifocal tumor, recurrent tumor, and high-risk anatomical location; patient related, such as immunosuppression; surgeon related, such as incorrect margin resected; or laboratory related. Two retrospective studies looked at possible reasons for tumor recurrence and found that possible errors could account for 77% to 78% of tumor recurrences, including tumor on the final margin, missing epidermis or dermis, dense inflammation possibly hiding tumor, and incorrect additional margin resected (mapping error).[72-74] A case-control study found that after multivariate analysis, only tumor on final margin, missing epidermis or dermis, and aggressive tumor type were significantly more frequent in recurrent cases than in controls.[75] These findings suggest that continued quality improvement activities can further improve the already excellent MMS cure rates.[76]

APPROPRIATE USE OF MMS

The utilization of MMS has markedly increased during the past 2 decades, and its use has grown disproportionately compared with all other treatment modalities. Some argue that this is an expected finding given the almost epidemic-like increase in skin cancer and the marked increased number of trained Mohs surgeons in the same time frame. Yet, the concern of overutilization or misuse of MMS brought on greater scrutiny by the Centers for Medicare and Medicaid Services and other insurance carriers and eventually lead to consideration of heavy restrictions, including potentially complete elimination of coverage for MMS. To avert these regulatory actions, and to help define the clinical scenarios that are best treated by MMS, the American Academy of Dermatology (AAD) formed an ad hoc task force to develop appropriate use criteria (AUC) for MMS.[77] The AUC process was based on a well-established method developed by the Rand Corp/UCLA and has been successfully applied in the fields of cardiology and radiology. The Mohs AUC are the first AUC developed in dermatology. This was a collaborative effort between the AAD, the American College of Mohs Surgery, the American Society for Dermatologic Surgery, and the American Society for Mohs Surgery. Nearly 80 dermatologists were involved representing all different types of practice and geographic locations. To eliminate potential conflicts of interest or perceived conflicts, most rating panel experts were not Mohs surgeons. More than 400 peer-reviewed articles were presented to the panel, and 161 were identified and analyzed to support the evidence-based tables supporting the MMS AUC.[77] This collaboration of dermatologists developed AUC for 270 clinical scenarios of skin cancer based on cancer and patient characteristics.[78] The 17-member ratings panel ranked each clinical situation into appropriate, inappropriate, or uncertain categories from evidence-based medicine, clinical expertise, and expert judgment.[78] After consensus was achieved in all 270 scenarios, 200 (74.1%) were deemed appropriate, 24 (8.9%) as inappropriate, and 46 (17.0%) as uncertain.[78] These results were jointly published in the *Journal of the American Academy of Dermatology* and *Dermatologic Surgery* in October of 2012. The AAD subsequently developed a telephone application of the MMS AUC for greater availability in the practice setting.

There are a few caveats to the AUC on MMS. First, they are designed to be a guideline of care and not to define the standard of care. The final decision in patient care should reside in the physician's expert judgment. Second, these are not comparative AUC, and, thus, no conclusions can be drawn about the efficacy of MMS compared with that of other treatment modalities. Third, cost was considered only as an additional factor (implicit), not as a primary factor (explicit). Therefore, no conclusions can be drawn regarding the cost-effectiveness of MMS compared with that of other modalities. Finally, these guidelines are considered to be a living revisable

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document, such that as our experience and knowledge changes so will the Mohs AUC.

COST ANALYSIS OF MMS

The US skin cancer epidemic is associated with substantial costs to the health care system. Skin cancer (including MM) is the fifth most costly malignancy to treat in the United States.[79,80] A recent report estimates that the average annual cost of treating skin cancer in the United States increased 125% to $8.1 billion in 2007-2011 from $3.6 billion in 2002-2006.[3] Moreover, the direct reimbursements from Medicare to physicians for treatment procedures for cutaneous malignancies increased by 137% from 1996 to 2008.[81] As health care systems struggle to reduce overall expenditure and promote cost-effective treatment, understanding the costs of skin cancer treatments, including MMS, will be critical.

In evaluating health care system expenditures for skin cancer treatment, numerous cost contributors must be considered, including reimbursement for the treatment procedure itself, pathologic evaluation, repair/reconstruction of the resulting defect, anesthesia, facility charges, materials/supply charges, pharmaceuticals, and any additional treatment procedures to re-treat a skin cancer after inadequate initial treatment or positive margins. Moreover, when reviewing studies that evaluate the relative costs of medical treatments, the distinction between cost comparison and cost-effectiveness is critical.[82] Cost comparison can be defined as the evaluation of the cost of one procedure vs a different procedure(s) and the variables that may affect that cost.[82] In contrast, cost-effectiveness analysis compares the relative costs and outcomes of 2 or more medical interventions.[82]

Comparative cost analysis of NMSC treatment options in the US health care system has been evaluated in 4 recent publications.[83-86] These studies report the payments by insurers to treat NMSC using a range of modalities, including MMS, traditional surgical excision, local destructive surgery, radiation therapy, and topical immunomodulatory cream (imiquimod) treatment. The effect of histologic margin control in excisional modalities (permanent vs frozen section pathology) and the site of service (office based, ambulatory surgical center, or hospital-based operating room) on the ultimate cost of the procedure are also calculated.[82] The results of cost comparison studies are summarized in Table 2.[83-86]

These studies show that MMS is cost comparable to office-based surgical excision and clearly less expensive than facility-based excision or radiation therapy. Mohs micrographic surgery is more expensive than local destruction or imiquimod therapy. However, the latter treatments have substantial drawbacks. Imiquimod is approved by the Food and Drug Administration for superficial BCC of the trunk and extremities only, and the National Comprehensive Cancer Network guidelines limit the use of local destructions in

TABLE 2. Estimated Costs of Varied Nonmelanoma Skin Cancer Treatment Modalities and Sites of Service Based on Published Cost Comparison Studies[a]

Treatment and site	Estimated costs ($)				
	Ravitskiy et al,[83] 2012	Bialy et al,[84] 2004	Rogers and Coldiron,[85] 2009	Wilson et al,[86] 2012	Mean
MMS	804	937-956	1197	2085	1258
Exc./Perm./Office	1025	944-1029[a]	1088	1222[b]	1081
Exc./Froz./Office	1199	1399[b]			1299
Exc./Froz./ASC	2507		2267		2387
Exc./Froz./OR			2883		288
Local destructive surgery (ED&C)			432	463	447
Radiation			2575-3446		3011
Imiquimod			945		945

[a]ASC = ambulatory surgery center; ED&C = electrodessication and curettage destruction; Exc. = traditional surgical excision; Froz. = frozen section margin control; Imiquimod = topical 5% imiquimod therapy (6 weeks); MMS = Mohs micrographic surgery; Office = office-based surgical setting; OR = hospital-based operating room setting; Perm. = formalin permanent section margin control; Radiation = radiation therapy treatment based on 12 to 17 fractions.

[b]Mixed site of service that may include some facility-based treatment.

cutaneous malignancies that are large, aggressive, or in high-risk locations.

The cost-effectiveness of MMS compared with traditional surgical excision has also been evaluated. Seidler et al[87] used a "time trade off" model based on the surgical defect size and likelihood of tumor recurrence. In this study, MMS had an average cost of $957 with a projected quality-adjusted life expectancy of 15.67 quality-adjusted life-years.[82] Traditional surgical excision with a combination of permanent and frozen section margin control costs $1248 and has a projected quality-adjusted life expectancy of 15.61 quality-adjusted life-years.[82]

A more conventional cost-effectiveness evaluation of cost per cancer cure has also been calculated using costs from US studies and historical outcome rates, resulting in US-specific cost-effectiveness ratios.[82] With a difference of $177 in average cost between MMS and office-based excision with permanent sections for NMSC of the face, and taking into account the previously published higher recurrence rates of excisions for NMSC, the cost to prevent a recurrence is $1967. This $1967 is almost twice the cost of a Mohs case.[82]

Thus, given its better effectiveness and lower price tag, MMS is clearly cost-effective compared with any treatment rendered in an inpatient or outpatient facility setting. Moreover, in evaluations with office-based surgical excision with permanent sections,[82] MMS is more effective, with higher cure rates and smaller defects, and also costs less in some studies, but on average, MMS is no more than 15% more expensive.

There is a misperception in the medical community that MMS is a very expensive procedure. It has drawn substantial attention from insurers and regulators as a possibly overused and misvalued procedure, and MMS's cost-effectiveness has been questioned.[88] Mohs micrographic surgery is the only procedure that includes all surgery,

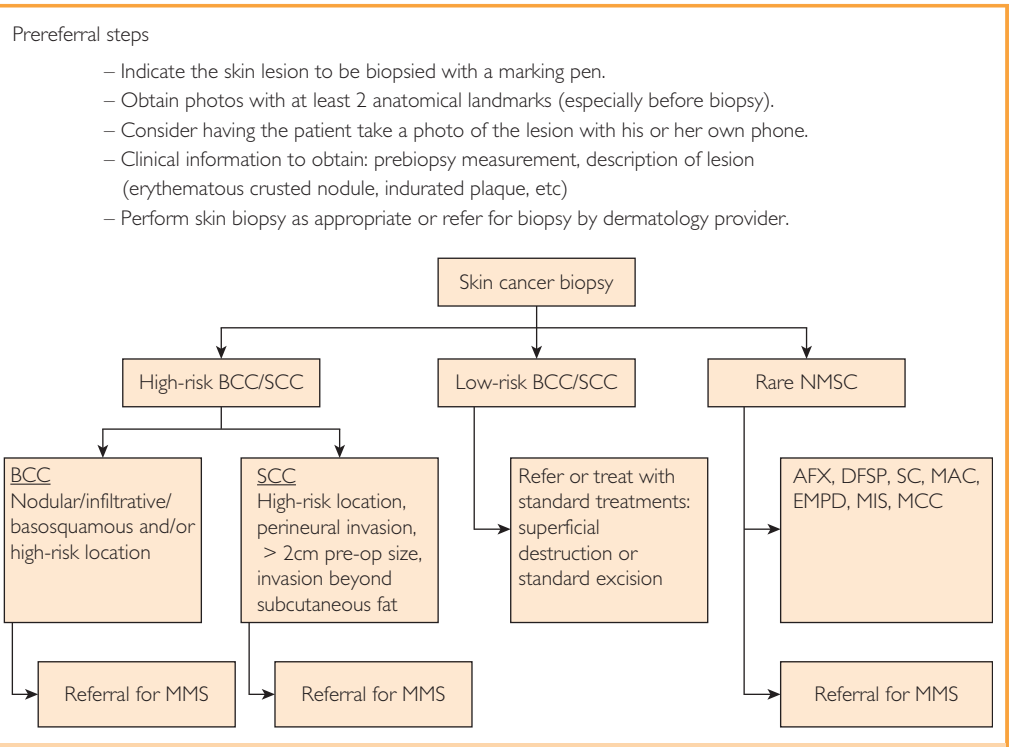

FIGURE 3. Referral steps in the management of cutaneous malignancy for nonmelanoma skin cancer (NMSC). AFX = atypical fibroxanthoma; BCC = basal cell carcinoma; DFSP = dermatofibrosarcoma protuberans; EMPD = extramammary Paget disease; MAC = microcystic adnexal carcinoma; MCC = Merkel cell carcinoma; MIS = melanoma in situ; MMS = Mohs micrographic surgery; SC= sebaceous carcinoma; SCC = squamous cell carcinoma.

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pathology, anesthesia, and supply expenses in the payment for the primary code(s). With MMS, a single payment is made to a single provider. When a patient is treated for skin cancer by facility-based excision, insurer payments are spread out over charges for the operating room, surgeon, anesthesiologist, pathologist, all supplies, and laboratory. The result is that when analyzing facility-based excision, it is easy to solely report payment for the surgical excision and ignore all the mandatory attendant costs. This makes surgical excision seem to be much lower in cost than MMS and more difficult for insurers to track.

As patients become more savvy consumers of health care, many are seeking the best value and quality for their health care dollar. It seems that MMS is an outstanding example of a procedure that is not only cost-effective but also enhances quality of care and adds great value for the patient with skin cancer.[89] As health care costs rise, and insurers and payers attempt to contain costs, there will be increased calls for transparency in charges. Any office-based procedure, but in particular MMS, will become obvious as the most affordable option.

REFERRING PATIENTS FOR MMS

Referring patients to the micrographic surgeon necessitates some critical steps (Figure 3). These steps will assist the surgeon and his or her team in correctly identifying the tumor type and tumor site. Commonly, after a skin biopsy is performed, new skin will grow over the biopsy site. If enough time has passed, this biopsy site may not be readily noticeable, especially if the patient has had previous biopsies, cryotherapy, or multiple concurrent biopsy sites. It is essential to ensure that the site is marked with a tissue-marking pen before taking a photograph that shows at least 2 anatomical landmarks to put the site in context.

CONCLUSION

In our experience, MMS is a safe, effective, and cost-efficient treatment modality for cutaneous malignancies. It allows for the highest cure rates while preserving the maximum amount of normal tissue, allowing for immediate reconstruction. As the incidence and diagnosis of skin cancer increases, the demand for cutaneous surgery will continue to evolve. Communication between nondermatology providers and general dermatologists and Mohs surgeons will aid in appropriate and efficient care for patients with skin cancer.

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Abbreviations and Acronyms: **AAD** = American Academy of Dermatology; **AFX** = atypical fibroxanthoma; **ASC** = ambulatory surgery center; **AUC** = appropriate use criteria; **BCC** = basal cell carcinoma; **cSCC** = cutaneous squamous cell carcinoma; **DFSP** = dermatofibrosarcoma protuberans; **ED&C** = electrodessication and curettage destruction; **EMPD** = extramammary Paget disease; **MAC** = microcystic adnexal carcinoma; **MCC** = Merkel cell carcinoma; **MIS** = melanoma in situ; **MM** = melanoma; **MMS** = Mohs micrographic surgery; **NMSC** = nonmelanoma skin cancer; **SC** = sebaceous carcinoma; **SCC** = squamous cell carcinoma; **WLE** = wide local excision

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