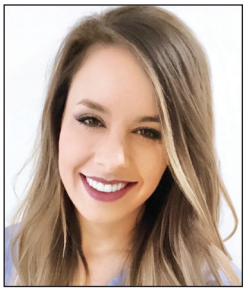
Current Controversies in Mohs Micrographic Surgery



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- Further investigation is needed to elucidate and optimize solutions to current controversies in Mohs micrographic surgery.

Current controversies in Mohs micrographic surgery (MMS) center on the types of tumors treated with MMS, increasing utilization, third-party payer reimbursement, the Appropriate Use Criteria (AUC), and subspecialty certification.

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Mohs micrographic surgery (MMS) has been met with controversy since its inception in the 1930s. Current debate centers on the types of tumors treated with MMS, increasing utilization, third-party payer reimbursement, the Appropriate Use Criteria (AUC), and subspecialty certification.

Controversies in Applications

Controversy surrounding treatment with MMS for certain tumor types is abundant, in large part due to a lack of well-designed studies. Perhaps most notably, the surgical management of melanoma has been hotly contested for decades.[1] An increasing number of Mohs surgeons advocate the use of MMS for treatment of melanoma. Advocates reason that tumor margins may be ill-defined, necessitating histologic examination of the margin for tumor clearance. In a study by Zitelli et al,[2] 5-year survival and metastatic rates for 535 patients with melanomas treated by MMS with frozen sections were the same or better when compared to historical controls treated with conventional wide local excision. Melanoma-associated antigen recognized by T cells (MART-1) immunostaining may offer improved diagnostic accuracy.[3] Others believe that staged excision with permanent sections processed vertically, en face, or horizontally ("slow Mohs") is more accurate and efficacious for the treatment of melanoma.[1] Advocates of this approach maintain that when compared to MMS with frozen sections, staged excision with permanent sections enables more accurate interpretation of residual melanoma and atypical junctional melanocytic hyperplasia as well as circumvents difficulty in interpreting freeze artifact.[4]

Although Merkel cell carcinoma has traditionally been treated with wide local excision, MMS with or without adjuvant radiotherapy has gained traction as a treatment option. Advocates for treatment by MMS hold that Merkel cell carcinoma is a contiguous tumor with a high rate of residual tumor persistence, making histologic margin control an ideal characteristic of treatment. However, in the absence of large randomized controlled studies comparing MMS to wide local excision, controversy surrounds the most appropriate surgical approach.[1] In a retrospective study of 86 patients by O'Connor et al,[5] MMS was demonstrated to compare favorably to standard surgical excision. Standard surgical excision was associated with a 31.7% (13/41) local persistence rate and 48.8% (20/41) regional metastasis rate compared to 8.3% (1/12) and 33.3% (4/12) for MMS, respectively.[5]

Controversies in Increasing Utilization

The incidence of skin cancers has increased in recent years. As a result, it is reasonable to expect the rates

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of MMS to increase. Nonetheless, there is escalating concern among groups of third-party payers, the public, and physicians that MMS is being overused.[6] Growth of the body of evidence supporting the appropriateness of MMS remains essential. Such studies continue to support reasons for increased MMS usage, demonstrating the stability of the percentage of skin cancers treated with MMS in the setting of increasing skin cancer incidence, the procedure's superior efficacy for appropriately chosen cases, its expanding application to melanoma and other tumors, and an emphasis of MMS in residency training programs.[6-9]

A current hot topic of controversy focuses on the wide variation among Mohs surgeons in the mean number of stages used to resect a tumor. Overuse among outliers has been proposed to stem from lack of technical expertise or from abuse of the current fee-for-service payment model, which bases compensation on the number of stages performed. A study by Krishnan et al[10] determined that the mean number of stages per tumor in the studied population (all physicians [N=2305] receiving Medicare payments for MMS from January 2012 to December 2014) was 1.74, with a range of 1.09 to 4.11. Persistently high outliers were more likely to perform MMS in a solo practice, with an odds ratio of 2.35.[10] In response to the wide variation in mean stages used to resect a skin cancer and its implications on increased financial burden and surgery to individual patients, intervention has been proposed. Notably, it has been demonstrated that mailing out individual reports of practice patterns to high-outlier physicians resulted in a reduction in mean stages per tumor as well as an associated cost savings when compared to outlier physicians who did not receive these reports.[11]

Controversies in Reimbursement

Mohs micrographic surgery also has been in the spotlight for debate regarding reimbursement. The procedure has been targeted partly in response to its substantial contribution to total Medicare reimbursements paid out. In 2013, primary MMS billing codes constituted nearly 19% of total reimbursements to dermatologists and approximately 0.5% of total reimbursements to all physicians participating in Medicare.[12] Mohs micrographic surgery codes have correspondingly received frequent review by the Relative Value Scale Update Committee and remained on a list of potentially misvalued services according to the Centers for Medicare & Medicaid Services for years.[13] Due to continued scrutiny and review, especially by the Relative Value Scale Update Committee and Centers for Medicare & Medicaid Services, reimbursement to perform MMS and reconstructive surgery has gone down by more than 20% in the last 15 years.[14] Public perception mirrors third-party payer concerns for overcompensation. An article title in the *New York Times* theatrically postures "Patients' Costs Skyrocket, Specialists' Incomes Soar."The article recounts an MMS patient's "outrage at charges" associated with treatment of her"minor medical problem" and the simultaneous "sharp climb" in dermatologist income over the last 2 decades.[15]

However, studies continue to demonstrate the cost-effectiveness of MMS. A study by Ravitskiy et al[16] demonstrates the cost-effectiveness of MMS, regardless of place of service or type of tumor. Of 406 tumors studied, MMS was the least expensive surgical procedure evaluated ($805 per tumor) when compared to standard surgical excision with permanent margins ($1026 per tumor), standard surgical excision with frozen margins ($1200 per tumor), and ambulatory surgery center standard surgical excision ($2507 per tumor). Furthermore, adjusted for inflation, the cost of MMS was lower in 2009 vs 1998.[16] Similar results have been consistently demonstrated.[17]

Controversies in the AUC

To provide clinicians, policy makers, and insurers guidance for utilization of MMS in the setting of concerns for overutilization, overcompensation, and inappropriate application, the MMS AUC were established in 2012. The guidelines were developed by a process integrating evidence-based medicine, clinical experience, and expert opinion and is applicable to 270 clinical scenarios.[18]

A unique set of debate accompanies the guidelines. Namely, controversy has surrounded the classification of most primary superficial basal cell carcinomas as appropriate for treatment by MMS. These tumors have comparable cure rates when treated by MMS or curettage and cryosurgery, are often multifocal and require more Mohs stages than other basal cell carcinoma subtypes, and largely lack data on recurrence and invasion.[19] The guidelines also have been scrutinized for including only studies from the United States.[20] Furthermore, the report is largely based on expert opinion rather than evidence.

Some Mohs surgeons have concerns that the guidelines will minimize clinical judgment. Nonetheless, deviations from the AUC practiced by Mohs surgeons have been reported where clinical judgment supplants guideline criteria. The most commonly cited reasons for performing MMS on tumors classified as uncertain or inappropriate, according to one study by Ruiz et al,[21] included performing multiple MMSs on the same day, tumor location on the lower legs, and incorporation into an adjacent wound. Reported discrepancies in the AUC further emphasize the importance of clinical judgment and call into question the need for future revision of the criteria.[22] For example, a primary squamous cell carcinoma in situ greater than or equal to 2 cm located on the trunk and extremities (excluding pretibial surfaces, hands, feet, nail units, and ankles) in a healthy patient is categorized as appropriate, while a recurrent but otherwise identical squamous cell carcinoma in situ is categorized as uncertain. These counterintuitive criteria are unsupported by existing studies.

Controversies in Subspecialty Certification

Recently, debate also has surfaced regarding subspecialty certification. Over the last decade, proponents of

subspecialty certification have argued that board certification would bring consistency and decrease divisiveness among dermatologists; help to prevent exclusion of Mohs surgeons from insurance networks and teaching opportunities at the Veterans Administration; and demonstrate competence to patients, the media, and payers. Those in opposition contest that practices may be restricted by insurers using lack of certification to eliminate dermatologists from their networks, economic credentialing may be applied to dermatologists such that those without the subspecialty certification may not be deemed qualified to manage skin cancer, major limitations may be set determining which dermatologists can sit for the certification examination, and subspecialty certification could create disenfranchisement of many dermatologists. A 2017 American Academy of Dermatology member survey demonstrated ambivalence regarding subcertification, with 51% of respondents pro-subcertification and 48% anti-subcertification.[23]

Nonetheless, after years of debate the American Board of Dermatology proposed subspecialty certification in Micrographic Dermatologic Surgery, which was approved by the American Board of Medical Specialties on October 26, 2018. The first certification examination will likely take place in 2 years, and a maintenance of certification examination will be required every 10 years.[24]

Final Thoughts

Further investigation is needed to elucidate and optimize solutions to many of the current controversies associated with MMS.

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