VIEWPOINT

Reevaluating Mohs Surgery Appropriate Use Criteria for Primary Superficial Basal Cell Carcinoma

Howard K. Steinman, MD
US Dermatology Partners, Texas, Grapevine.

Anthony Dixon, PhD, MBBS
Australasian College of Cutaneous Oncology, Docklands, Victoria, Australia.

Christopher B. Zachary, MBBS, FRCP
Department of Dermatology, University of California, Irvine.

Corresponding Author: Howard K. Steinman, MD, US Dermatology Partners, Texas, 2321 Ira E Woods Ave, Suite 180, Grapevine, TX 76051 (hksteinman@gmail.com).

Based on the biology of primary superficial basal cell carcinoma (sBCC), most sBCCs currently scored as "appropriate" by the Mohs surgery appropriate use criteria (MAUC)[1] for treatment with Mohs surgery (MS) should be reclassified as "uncertain" or "inappropriate."

Superficial BCCs are generally indolent, low-risk, often histologically multifocal skin cancers exhibiting minimal or no dermal invasion. Studies suggest that they may comprise 17% to 30% of all BCCs. Superficial BCCs have a mean thickness of 0.30 mm and seldom penetrate more than 1 mm down hair follicles.[2] This makes them amenable to surgical and nonsurgical treatments, including MS, curettage (alone or combined with electrodessication, cryotherapy, or imiquimod), cryotherapy, and topical imiquimod and fluorouracil.[3]

Risk of progression and recurrence is very low at all anatomic sites with such treatments as curettage alone or curettage and cryotherapy.[4] These high cure rates are achieved despite more than 20% of serially sectioned punch biopsy specimens and more than 50% diagnosed as sBCC showing foci of more aggressive BCC subtypes.

There is unfortunately a paucity of evidence from randomized and nonrandomized controlled clinical studies comparing the biologic behavior of sBCC with other lower-risk BCC subtypes (eg, nodular and cystic subtypes). Furthermore, there are very few studies that assess the effectiveness of MS for sBCC, nor are there studies comparing its effectiveness with alternative treatments for sBCC.[5] Thus, those creating the MAUC for sBCC were forced to make their final determinations based significantly on their clinical experience and individual opinions.[1] The MAUC categorizes and scores nearly all sBCCs the same as other lower-risk (nodular and cystic) BCC subtypes. Indeed, it scores nearly all sBCCs on MAUC area H (forehead, temples, central face, ears, postauricular, hands, feet, areola, and genitalia) as "appropriate" for MS.[1] We believe this merits reconsideration.

A steady increase in the incidence of nonmelanoma skin cancer resulted in a significant increase in the use of MS. Concerns about potential excessive use of MS, especially on the trunk and extremities, led to a highly comprehensive and successful effort to establish MAUC. Its primary goal is not to be comparative with alternative treatments but to define which cancers should not be treated with MS. According to MAUC, BCCs located on the central face, those with larger diameters (based on anatomic site), and those which arise in patients with certain immunosuppressive conditions and genodermatoses are known risk factors for an increased risk of tissue invasion and recurrence; therefore, they should be treated with MS. The concern is that MAUC scores all central facial BCCs, including sBCCs, as "appropriate" for MS. Unfortunately, none of the studies supporting this treatment paradigm separately evaluated sBCC behavior, and we could find no studies suggesting that sBCCs are more likely to invade below the superficial dermis or recur on the central face than elsewhere. Tumors of any size in MAUC Area H, greater than 1.0 cm in area M (scalp, posterior aspect of the cheeks, neck, and anterior aspect of the legs), and greater than 2.0 cm in area L (trunk, upper extremities, thighs, and posterior aspect of the legs) have been suggested to be a risk factor recurrence in other BCC subtypes. To our knowledge, no studies of sBCC indicate that larger diameters pose an increased risk of recurrence.

Patients with certain immunosuppressive conditions (hematologic malignant neoplasms, organ transplants, and human immunodeficiency virus) and specific genodermatoses are at higher risk of developing BCC. All primary BCCs arising in these patients receive higher MAUC scores than they would otherwise. We could find no studies separately evaluating sBCC in these patient groups, suggesting that they behave more aggressively or have a higher likelihood of recurrence. MAUC scores all sBCCs in patients with specific genodermatoses and of any size in area H in patients with certain immunosuppressive conditions as "appropriate."[1] As an example, the MAUC currently determines that a 0.3-cm sBCC on the neck of a patient with basal cell nevus syndrome or an immunosuppressed patient would be "appropriate" for MS.

Very few reports have evaluated MS for sBCC. Mina et al[5] evaluated 158 sBCCs treated with MS.[5] An average of 2.6 stages were required for tumor clearance, with postoperative wound sizes varying from 2.5- to 38.5-fold larger than the preoperative estimated tumor sizes. Orengo et al[6] found that 54% of sBCCs treated with MS required 3 or more stages for tumor clearance with wide wound extensions found beyond clinical pretreatment margins. They noted that only 18% of nodular BCCs and 37% of micronodular, infiltrative, and morpheaform BCCs required 3 or more stages. The average number of stages for clearance for all nonmelanoma skin cancers has been reported to be 1.2 to 1.9.

Skin cancers treated with MS often result in wounds into or below the fat layer usually meriting primary repair. Because sBCCs are indolent, penetrate minimally, and are often multifocal, there seems little justification to excise them into subdermal tissue with a technique contraindicated for multifocal (discontinuous) tumors. This is especially true when the limited available data suggest MS for sBCC likely requires more stages than other BCC subtypes for clearance and may leave larger surgical defects.[6]

Available evidence suggests that nonexcisional surgical treatments and nonsurgical therapies are effective for most sBCCs. Expected recurrence rates when treating sBCC with curettage and cryosurgery are 1.1% or less.[4] Studies of sBCCs treated with curettage followed by topical imiquimod found recurrence rates of 4% or less. Meta-analysis of pooled estimates from available studies have shown cure rates with imiquimod topical therapy (87.3%) and photodynamic therapy (84.4%).[7] These are lower but potentially acceptable cure rates, particularly in an aged or infirm population.

Other than photodynamic therapy or imiquimod alone, these nonexcisional surgical treatments and topical therapies are comparable in effectiveness to MMS with potentially less cost.

With no strong evidence suggesting that sBCCs pose a higher risk based on anatomic site or health status, and with nonexcisional surgical and nonsurgical treatments offering comparable acceptable cure rates with potentially less tissue invasion, morbidity and cost, the authors of the MAUC might consider rescoring MS for most sBCC as "inappropriate" or "uncertain." This would place the MAUC in agreement with many other published international care guidelines.

The MAUC authors realized that, as with all published treatment guidelines, the MAUC "…is intended as a living revisable document that will need to be reviewed and modified as new data become available pertaining to the appropriate use of MS."[1] We suggest that it is time to begin the process of reevaluating MAUC for sBCC. Continuing to categorize MS for sBCC as "appropriate" tends to support considerable overtreatment of this most indolent, superficial, and often multifocal BCC variant.

ARTICLE INFORMATION

Published Online: March 7, 2018. doi:10.1001/jamadermatol.2018.0111

Conflict of Interest Disclosures: None reported.

REFERENCES

1. Connolly SM, Baker DR, Coldiron BM, et al; Ad Hoc Task Force; Ratings Panel. AAD/ACMS/ASDSA/ASMS 2012 appropriate use criteria for Mohs micrographic surgery: a report of the American Academy of Dermatology, American College of Mohs Surgery, American Society for Dermatologic Surgery Association, and the American Society for Mohs Surgery. *J Am Acad Dermatol*. 2012;67(4):531-550.

2. McKay KM, Sambrano BL, Fox PS, Bassett RL, Chon S, Prieto VG. Thickness of superficial basal cell carcinoma (sBCC) predicts imiquimod efficacy: a proposal for a thickness-based definition of sBCC. *Br J Dermatol*. 2013;169(3):549-554.

3. Arits AH, Schlangen MH, Nelemans PJ, Kelleners-Smeets NW. Trends in the incidence of basal cell carcinoma by histopathological subtype. *J Eur Acad Dermatol Venereol*. 2011;25(5):565-569.

4. Lindemalm-Lundstam B, Dalenbäck J. Prospective follow-up after curettage-cryosurgery for scalp and face skin cancers. *Br J Dermatol*. 2009;161(3):568-576.

5. Mina MA, Picariello A, Fewkes JL. Superficial basal cell carcinomas of the head and neck. *Dermatol Surg*. 2013;39(7):1003-1008.

6. Orengo IF, Salasche SJ, Fewkes J, Khan J, Thornby J, Rubin F. Correlation of histologic subtypes of primary basal cell carcinoma and number of Mohs stages required to achieve a tumor-free plane. *J Am Acad Dermatol*. 1997;37(3, pt 1):395-397.

7. Roozeboom MH, Arits AH, Nelemans PJ, Kelleners-Smeets NW. Overall treatment success after treatment of primary superficial basal cell carcinoma: a systematic review and meta-analysis of randomized and nonrandomized trials. *Br J Dermatol*. 2012;167(4):733-756.