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Effectiveness of the Mohs and Close Technique in Increasing the Efficiency of a Mohs Micrographic Surgery

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We read with great interest the article by Mehta and colleagues, suggesting the "Mohs and Close" technique (MCT) for selected cases to increase the efficiency of Mohs micrographic surgery (MMS).[1] In our opinion, this study was hastily devised, deviates from the standard of care, and threatens the integrity of MMS as the gold standard for margin controlled, tissue sparing removal of skin cancers. The authors selected tumors they believed could be excised with MMS in an elliptical fashion, cleared in one stage, and closed with primary or partial closures prior to reviewing pathology to save time. Our concerns with this approach and this study are fourfold: tumor selection bias, tumor disruption, arbitrary repair determination, and margin size inflation.

First, the selection of "low risk biopsy-proven tumors" is vague at best without a description of inclusion and exclusion criteria for specific histologic subtypes or what qualified a tumor to have clearly defined margins. Biopsies are only indicative of a sample of a tumor and there are several studies in the literature that reveal tumor upstaging after entire lesion removal.[2-5] For example, Jiang and colleagues recently conducted a retrospective 5-year review revealing SCCIS upstaged to SCC in 16.3% of MMS cases.[5] While the MCT authors comment on peripheral versus deep margin positivity for the 18.9% of cases requiring 2 or more stages, it would have been beneficial to also note the tumor subtype on subsequent stages to see if these tumors were upstaged and thus better delineate which tumor subtypes may actually benefit from this approach. Furthermore, it is well accepted that clearly defined tumor margins on clinical exam is not a reliable indicator of tumor growth on the head and neck. This is the basis of MMS and an approach to undermine this further precludes the utility of this technique.

Second, tumors infiltrate in a three-dimensional fashion. If a surgical defect has been preemptively undermined before knowledge of margin status, the utility of MMS for microscopic margin control is essentially negated. While peripheral margin control may be maintained by undermining in the subcutaneous plane, the deep margins are likely to become distorted, leaving a challenge for the Mohs surgeon to track residual tumor. Leaving behind or iatrogenically seeding tumor with preemptive undermining is a valid concern as there has been a report of a simple punch biopsy causing tumor implantation.[6] Placement of multiple orientation nicks does not necessarily permit precise localization of residual tumor. Numerous nicks can result in confounding artefacts and a greater rate of false negatives and false positives. It would be beneficial to longitudinally follow patients treated with the MCT to determine their 5-year recurrence rates.

Third, for those cases requiring 2 or more stages, arbitrarily choosing between only primary or partial closures limits reconstructive options, risks placing tension on free margins, and hampers the ability to maximize functional and cosmetic outcomes for patients – especially when tumors grow in unilateral directions leading to unanticipated defects. In fact, it would have been interesting to see what percentage of cases requiring 2 or more stages underwent partial closure instead of primary closure due to larger than expected defects. We are also surprised that healing by secondary intention was not utilized even once in 456 cases as this is a well-accepted option for concave sites and even convex sites such as the scalp and anterior lower extremity.[7] Allowing appropriate sites to heal by secondary intention would allow for more efficient specimen acquisition for subsequent stages with a "Mohs and Secondary Intention" technique (MSIT), an even more time and cost-effective approach.

Lastly, the appropriate use criteria for MMS was developed to delineate cases where MMS may be appropriate but not mandatory.[8] MMS is beneficial due to its high cure rates and when the Mohs surgeon is unsure if the first layer is going to have positive or negative margins. Treatments including excision, disc saucerization, local destruction, and topical therapy may also be offered to patients depending on tumor characteristics and histologic subtype. The MCT offered to patients in this study is essentially an excision with the possibility of a re-excision if positive margins were found on the first stage. If a Mohs surgeon is confident the first stage is going to be negative, then they may be preferentially selecting smaller tumors and larger margins, which effectively negates MMS as a tissue sparing procedure. The American College

of Mohs Surgery Improving Wisely Quality Collaborative recently compiled Medicare data from 2305 surgeons billing for Mohs surgery, which revealed a national average of 1.7 stages per case for the head, neck, genitalia, hands, and feet regions. Mehta and colleagues noted a lower average of 1.2 in their study, which falls below the low outlier cutoff (1.28 stages/case), suggesting potential selection and "large margin" biases.[1,9] While their data included all sites, only 13.6% (62/456) of tumors were on the trunk and extremities. To minimize these biases, the authors could have randomized patients to receive either MCT or MMS, used a third party to mark tumors with 2 mm margins, and blinded two Mohs surgeons with one taking layers and another doing repairs. Even if these potential biases were addressed, if a subset of low risk tumors were found to have a high percentage of clearance after one stage, should the argument be for excision instead of MCT or MMS? This would truly increase efficiency as the patient could go home immediately after excision and, more importantly, decrease utilization of costly healthcare resources. However, even with low risk tumors, 18.9% of cases required additional stages, which ultimately prolongs the time this subset of patients is waiting as a specimen could have been processing during the time is takes to remove sutures and reorient margins for an already repaired wound. Efficiency is a zero-sum game. Those of us practicing standard MMS often complete other tasks while waiting for slides (eg, taking care of other patients, medical record documentation, teaching residents, etc.). With the MCT technique, these tasks would have to be completed at the end of the day, effectively losing any efficiency gained. The argument of saving time for the patient is flawed as well. The net time saved is not nearly the large amount of time implied by the study but rather a mere 13.66 minutes, a relatively insignificant amount of time for a surgical procedure. Ultimately, "saving" time should not be a primary goal at the expense of potentially compromising high quality and cost-effective patient care.

Disclosure

The authors have no conflict of interest to declare.

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